

41210
TUTAMEN NAUTICUM:

OR, THE
S E A M A N ' s
P R E S E R V A T I O N
FROM
SHIPWRECK, DISEASES,
AND OTHER
CALAMITIES incident to MARINERS.

By **JOHN WILKINSON, M.D.**

Ea paranda sunt viatica, quæ simul cum naufrago enatabunt.

Socrat. in DIOG. LAERT.

*Every Seaman should provide for his voyage such things,
as, if he be shipwrecked, may float with him safe to
shore.*

The SECOND EDITION, with Large ADDITIONS.

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M DCC LXIII.

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TO THE HONOURABLE



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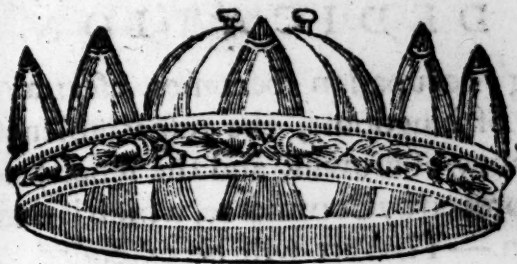
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THE HONOURABLE THE LORDS OF THE
COUNCIL OF THE KING
TO WHOM THESE PRESENTS COME
SHALL COME TO KNOW THAT BY
LETTERS UNDER THE GREAT SEAL OF
THE KING'S MOST EXCELLENT
MAYESTY BEING BEARER OF THESE
PRESENTS YOUR PETITION WAS
PRESENTED TO US IN THESE WORDS
THAT WE MIGHT BE PLEASED TO
GIVE YOU SUCH ANSWER AS TO US
SHOULD SEEM MEET AND REASONABLE
IN RESPECT OF THE MATTERS
AND REQUESTS IN YOUR PETITION
CONTAINED AND WE HAVE THEREUPON
GIVEN OUR ANSWER IN THESE WORDS
THAT WE HAVE CONSIDERED YOUR
PETITION AND REQUESTS AND HAVE
BEEN PLEASED TO GIVE YOU SUCH
ANSWER AS TO US SHOULD SEEM
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OF THE MATTERS AND REQUESTS
IN YOUR PETITION CONTAINED



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TO THE LORDS OF THE COUNCIL OF THE
KING



To the KING.

Illustrious Sovereign !

THE Mercy and Benevolence, which adorn the Royal Bosom, were too pre-eminent and conspicuous, to let me remain long in doubt who was the most proper Personage to whom I could address a Dissertation intended to diminish the calamities, to preserve the lives, and to extend the felicities of mankind. But more especially when a Prince, no less illustrious for the virtues of patriotism than those of humanity; a Prince, who has the wisdom, the magnanimity, and the rectitude of heart, to desire no greater sublunary glory than that of being the Guardian of the fortunes, the happiness, the liberty and the lives of his people; when I say such a Prince illuminates the *British* throne, a Treatise, which exhibits an easy and certain method of preserving the lives of shipwrecked seamen, cannot ask in vain for Patronage.

It is allowed that the dignity and security of the *British* nation depend upon her naval superiority; and, that the strength of her naval power is dependant on the numbers of seamen; and it is undeniable, that they will multiply in proportion as the perils of the sea are diminished, and the security of the

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sea-faring occupation becomes ascertained.—The opulence of kingdoms, the respectableness of states, the brilliancy of crowns, and the felicity of a people, are all improved by Commerce, which is maintained by navigation.—That art will be extended, and future difficulties to man the royal navy prevented, by rendering the sea-faring business perfectly secure, and by removing the apprehensions of danger, and causing the propagated terrors of parents to cease to intimidate their sons from venturing to sea.

ALTHOUGH I have long been perfectly persuaded that the simple contrivance here proposed would, under the royal favour, contribute greatly to promote all these noble and desirable purposes. — Nevertheless, I could not embolden myself to presume to offer it at your illustrious feet, until I could, at the same time, give Your Majesty that real felicity which an heart so benevolent must feel at the full assurance that it has already been the means of preserving the lives of a very considerable number of shipwrecked seamen; some of whom were brought safe to land, after being several hours in the water *; which I hope will appear sufficient to convince the whole world, that my proposal is not the whimsical project of a chimerical fancy; but that, being founded in the immoveable basis of experience and verity, and having the sanction of general approbation

* Capt. *Haughton* was 4 four hours; two men on the coast of *Sweden* were 5 hours; seven men in the bay of *Carnarvon* were most of them five hours and a half, in the sea. A fisherman was seven hours in the mouth of the river *Thames*. Two men and a boy on the coast of *Ireland*, one man on the coast of *Scotland*, and two on the *Isle of Man*, after floating several hours in the sea, (being shipwrecked) were saved by the cork-jacket:—but instances are too numerous to be particularly recited here.

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tion derived from the many strong facts which have been already proclaimed in its favour, it is now become a worthy object of Royal Patronage.

ON this account, though but an obscure person, yet I now venture, with the utmost deference, to address my proposal to your Majesty's favour, which I am persuaded it will readily obtain, because your own royal humanity will plead for it. I desire no better advocate: and am in great hopes that, altho' it has been for some time neglected and in obscurity, it shall now come forth recommended to the world by your Majesty's approbation of it; which will be the fullest encouragement to the prudent part of mankind to follow so illustrious an example, and to forward, as much as their several influences may do, the general good of a maritime people, by promoting this easy method of safety to shipwreck'd mariners. And then I make no doubt but we shall, as it is now really a popular desire, soon see orders issued, by proper authority, that every seaman on board the Royal Navy may be supplied with the certain means of security, since the expence of the whole will but amount to a very inconsiderable sum * — Seamen have a right to any protection that may be consistent with their employment.

THE *Roman*, who saved the life of a fellow citizen, had a public mark of honour conferred upon him for that act of benefit to the community. Hence also the physicians of *Rome*, who were supposed to have saved many Citizens, were, in the time of *Antonius Musa*, permitted to wear equestrian rings of gold, and to be exempt from taxes— The seamen of your Majesty's navy, tho' a rough, yet are, at this time, as brave, magnanimous and

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* See page 17.

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generous a people as the *Romans* were formerly—the whole world confesses it. Nay, their universal attachment and noble esteem for your sacred Majesty, are indubitable proofs of their being, in general, men of merit and true judgment, as well as of sound patriotism—Then surely they are, or should be, as much the object of public estimation to their country, as ever the citizens of *Rome* were of old to each other.

It must afford pleasure to your Majesty to see yourself so well beloved of such a brave and invincible people. This would delight the ambition of any prince in the world: but the benevolence of your royal bosom will find a greater degree of happiness in the persuasion of their safety in shipwreck, than from their customary facility of vanquishing your enemies, as it is a more divine virtue in every prince rather to consult the preservation of his subjects, than to aggrandize his own glory by their fortitude in destroying the foes of his country.

THAT your Majesty may be long the darling, not only of the seamen of *Great-Britain*, to whom such a zealous loyalty is their greatest honour, but of all your subjects, as it is the desert of exalted merit, so it is the ardent wish of,

May it please Your MAJESTY,

Your dutiful Subject,

and very obedient humble Servant,

J. WILKINSON.



INTRODUCTION.



WHEN an easy way of insuring personal security, and of becoming, in a great measure, quite free from apprehensions of dangers, in a situation that was before particularly obnoxious to fatal accidents, is offered; it is reasonable to expect that arguments need not be multiplied to recommend the self-evident utility of such a proposal.

Every one who has perused the manner here laid down, for preserving the lives of ship-wreck'd mariners, will immediately conclude, that being simple, expenseless, easy and incontrovertably certain, having now been published four years, by this time it must have become almost an universal practice amongst the seamen to be as cautious of providing themselves with cork-jackets as with beds or cloaths; but the contrary appears from the long and dismal roll of fatal accidents by ship-wreck, which have happened since the first overture of this scheme of security. These make me to wish that it had been more generally adopted and encouraged.

On a medium computation I find that the number of British seamen drowned (com. ann.) as it appears from an estimation begun six years ago, has amounted to 4200 annually. It must be granted that the calculation was made in the time of war, when there are more seamen employed than in an ordinary way. But when we think upon this vast loss of useful lives, and again consider that 1000 men may be saved from thus perishing, with the greatest ease, and certainty, at the charge only of 75 £.* should we suppose any man possessed of common prudence who should, when it can be procured at such a trifling expence, and without any difficulty, refuse the safety? admit, and it cannot be fairly admitted, there is no probability that a ship will be cast away, yet there is always a possibility that such an accident may come to pass; and even the most distant contingency should engage us to insure it when an opportunity so inviting and undeniable solicits us to lay hold upon security.

And indeed, as plain honest truth and fact, supported by experiments, are capable of carrying strong conviction a great way; so, though sea-faring people are very averse to chimerical

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* See Page 17.

merical projects, yet they are extremely sensible and capable of any useful proposals which come properly recommended and explained to them. For this reason it is, that the unprejudiced and most prudent among them are in general become advocates for this: nay, several who speak of it in high encomiums have proved its utility, and many others, some of them heroes of the age, and those who hold danger in the greatest contempt, are not ashamed to espouse and adopt the certain security here recommended for escaping those dangers, against which it would be a disgrace and madness not to be provided, when an easy provision is offered.

This conviction, in favour of the proposal which has already prevailed with great numbers of the men of prudence and discernment among the sea-faring class, I am persuaded would have pervaded, with the same irresistible conviction, the minds of the more vulgar and unlettered part of that valuable body, provided they had been as obvious to the same opportunities of being convinced. But their province is not to read books; and therefore many seamen there are who may perhaps never have heard of the cork-jacket, tho' their captain has one in his chest.—These, if cast away, are unfortunate men!

When this proposal was first offered to the Society of Arts, and their public thanks returned for it, I remember a gentleman, who very frequently favours that laudable body with a speech or two, generally the cause of some diversion, stood up and observed against it, that it would be wrong to excite by any means, in the seamen, even the smallest idea of terror. He supposed that by making them safe the notion of fear would be raised amongst them.—I could wish this worthy orator would move for the demolition of engines for extinguishing of fires, and the total suppression of insurance-offices, as they are, according to his scheme of thinking, no better than public nuisances of criminal security.

My Memoir was read before the Society of Arts on the 4th of January 1758, and about two months after a certain person did me the honor to regard it in a light so much better than the orator, that he printed an account of it in the public papers, and was not even afraid of adopting it as his own invention. I am, doubtless, obliged much to him for the favour he has done me in fathering my child. But, if I mistake not, this ingenious mechanic is no niggard of favours of this kind, for he has done one of the same sort to Machiavel, who, in his *Arte di Guerra*, proposed a floating girdle for the conveying of soldiers over rivers with safety, which girdle being hollow, is to be filled with wind occasionally, to give buoyancy to the body that wears it.

This

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This civil person formerly adopted this as a curious contrivance of his own conceiting; but, when he heard of the cork-jacket, he immediately gave it the preference, and so Machiavel may now take his girdle again, and here I present him with it—'tis his property—'twere pity to rob the dead*.

A gentleman, who merits great applause for his good sense, and a just use of it, when chairman of the East-India company, on the publication of my book wrote me the subjoined letter, which is here annexed †, to shew that the Chinese, who are universally esteemed a very sensible and extremely ingenious nation, seldom venture to sea without a machine, by which they

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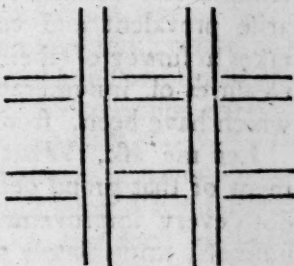
may

* Benignum est, et plenum ingenii pudoris, confiteri per quos profeceris.—Obnoxii profecto animi et infelicis ingenii est, deprehendi in furto malie quam mutuum reddere, cum praesertim, fors fiet ex Usura. *Plin.*

† S I R,

Having read your treatise called the *Seaman's Preservation*, of which I have a very good opinion; I have taken the liberty to give you an account of the method which the *Chinese* use to preserve themselves in the time of danger by shipwreck; which, tho' I think very far inferior in all respects to the ingenious invention you recommend; yet, as it may remove any objections that may be advanced against the practicability of your scheme, I think it may have a good effect in establishing its general use.

In the year 1730, I was passenger in a ship from *Batavia* to *China*, burthen about 400 tons, called the *Pridae*, *Francisco Xavier* commander, freighted by *English*, *Chinese* and *Portuguese*. Near the coast of *China* we met one of those storms called a *tonsoon* (*tau fong*) or a great wind, which carried away all our masts, bowsprit and rudder, and in our hold we had six feet of water. Expecting every moment the ship would founder.—We consequently were consulting our preservation. The *English* and *Portuguese* stood in their shirts only, ready to be thrown off, but the *Chinese* merchants came upon deck not in a cork-jacket, but I will call it a *Bamboo-habit*, (the shape is adjoined) which had lain ready in their chests against such dangers; and it was thus constructed; four bamboos, two before and two behind their bodies, were placed horizontally, and projected about 28 inches; they were crossed on each side by two others, and the whole properly secured, leaving a space for their body, so that they had only to put it over their heads and tie the same securely, which was done in two minutes, and we were satisfied they could not possibly sink.



March 10, 1759.

I am, S I R,

Your very humble Servant,

L^d. SULLIVAN.

may be floated to land provided they should suffer shipwreck.—Why should we not as well follow the example of this prudent nation in this article as in that of the compass, which we are told those eastern people were acquainted with for many centuries before the great R. Bacon discovered the verticity of the magnet to the Europeans? Are we to suppose the British seamen such a fool-hardy generation of mortals that they even despise the commendable means of proposed safety? We may as well believe that those who have seen the security, the demonstrated security of the simple invention here explained, will go to sea without being provided with it, as that they will weigh anchor and set sail without chart, without compass, or without quadrant; and who would admire the bravery of men embarking in such a situation? Can it be imagined that the sea-faring people derive from the element they live upon such a contempt for the dangers of it, such a wanton temerity or thoughtless ferocity and scorn of personal security, as even to think it approbrious to provide themselves with such easy means of preservation, as the wisest men would be ashamed to neglect? Is it not as reasonable to suppose, that in the urgent extremity of actual shipwreck they should refuse to lay hold upon the first floating body that offers itself? It is certainly much better to be provided with these portable, unsinkable, boats when they do not want them, than to wish for them in the last fatal gasp of peril. Surely such remissness, such absurdity and insatiation can never with justice be objected to the British mariners! They are, it is true, the most galant and intrepid part of the human race.—'Tis not only England; all the world confesses this demonstrated truth; yet they are likewise (which must also be acknowledged as universally) a prudent, thoughtful, circumspect body of men. They are not only undaunted, magnanimous, alert and exertive in opposing dangers and surmounting difficulties, but they are also sensible and inventive in providing against them; as will soon arise prevalent and convincing to the mind of any one who takes a survey of their art, which will appear abundant in the treasures of innumerable, very curious, and useful inventions, which have been, from time to time, discovered by seamen.

Let me ask, What doth mankind expect from the attainment of that grand desideratum, the longitude? To what end doth every improvement, or new discovery, in the sea-faring business, immediately tend? For certain, the principal object at which the most desirable acquisitions to this useful occupation directly point, is the preservation of the lives employed in it, and the diminution of those dangers to which such a precarious situation is naturally exposed. What is here recommended then

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I N T R O D U C T I O N.

is of such a tendency, that only folly will reject it and wickedness oppose.

The man, who is not an advocate for every beneficial proposal, is not a friend to mankind : it is certainly the part of a brute to be insensible to the calamities of others because he doth not feel the pain of them. And he who discourages, attacks with sarcasm, or endeavours to hinder, the diminution of misfortunes, from which he is personally exempt, must, in the eye of judges more humane and candid than himself, be regarded as a declared enemy of the human race. But I persuade myself, at least I hope, that no Englishman will ever discountenance any proposal that tends to the preservation of seamen ; for surely no nation has confessedly so great a dependance upon them as this. And they have given us very recent proofs that our affiance is very justly and firmly repositied.

But idle projects, ingendered in fancyful brains, teem so very multitudinously upon the public, that it is not a matter of wonder that even sensible and useful proposals should be countenanced with timidity, and received with caution, by the prudent ; or even, sometimes, by the buffoon, the droll or the recreant, be insulted with the cruel weapon, ridicule ! Few men are capable by the force of their own judgment, fewer still give themselves the trouble, to consider diligently and examine attentively ; but the fewest of all, even after full conviction in its favour, will exert themselves in promoting and recommending the useful invention, unless some private purpose, answered thereby, excites their friendly influence. The next degree of merit to having invented a useful discovery, is that of having encouraged and recommended it.

As men are generally born with very different abilities, and acquire different propensities ; therefore for any one sedately to sit down in judgment upon the merit of things he has not had opportunities, or diligence enough to consider, and to pass an implicit sentence upon merit or demerit, he could not comprehend, is not only an high injustice, and an high indiscretion and presumption ; but an insult upon the general good of humanity : for can any man claim such a vast portion of intellectual energy, as to be able, at a glance, to pervade and understand, in all its extent, what another may have been, a long time in acquiring a perfect knowledge of ? To such a man I recommend *Galileo's* words : *Sono multi chi fanno pochi ; sono pochi, chi fanno multi ; non ce nessuno, chi sa niente ; uno sol dio sa tutta.*

But men of a different temper, who have remarked with more perspicuity the imperfect state to which our best attempts have carried us, for the promoting of those arts which tend to the
good

good and convenience of human life, are convinced not only that we often struggle against the tide of difficulties and dangers, in many of our various pursuits and occupations; but they have also conceived it possible to obviate several of those real grievances, and that very thought has sometimes made themselves the agents whereby to prove it practicable, and excited them with a generous sense and magnanimity to exert their efforts to do it: hence it is that mankind are relieved of many grievous burthens, and supplied with many conveniencies: hence also the paths which have been laid open to various sciences are made more even, and more inviting to conduct mankind to happiness and perfection. Thus it is that inanimate matter is made to do the labour of men; the pump raises our water; the axis in peritrochio moves our burden by land, the ship transports it by water to distant places, making the produce of one country a blessing to another; the lever elevates weights superior to human force; the clock measures our time, and the pen exhibits our sentiments to the eye. Doubtless there was some difficulty to bring these inventions into use; prejudice and prepossession perhaps endeavoured to hinder their progress; had the evil influence of such opponents prevailed in our island, even the savages of *Guinea*, who had listened more to the voice of science and improvement, might perhaps at this day have purchased slaves on the coast of *Britain*; thro' the power of that spirit of malevolent repugnancy, which had called the quadrant a bauble, the compass a gimcrack, and the forty-seventh proposition of the first book of *Euclid*, an idle speculation.

Had this disposition took place, many a new world of riches, and benefits now commonly known to mankind, had to this day been unexplored.

Our progress in arts, like our advancement in learning, is well described in the animated lines of our poet.

— from the bounded level of our mind,
 Short views we take, nor see the lengths behind;
 But more advanc'd, behold with strange surprise,
 New distant scenes of endless science rise;
 So pleas'd at first, the tow'ring Alps we try,
 Mount o'er the vales and seem to tread the sky;
 Th' eternal snows appear already past,
 And the first clouds and mountains seem the last;
 But those attain'd, we tremble to survey
 The growing labours of the lengthen'd way;
 Th' increasing prospect tires our wand'ring eyes,
 Hills peep o'er hills, and Alps on Alps arise.

Pope.
 In

In *Ireland* it was formerly the practice to draw the cart and plough, by the beast's tail; and the present method of harness was, therefore, vehemently clamoured at, as a strange and unsufferable innovation. So the plodding drudge of habitude goes on just as his predecessor led the way, without spirit to advance out of an old but dirty, inconvenient, and dangerous track; tho' accident and misfortune continually perplex and hinder his progress: still doing as his father has done before, and for no other reason but because he has done so before, will he continue to do it again. He never considers how much better, safer, or easier methods might be found out, or how little is already known, in comparison of what may be discovered; how few have cultivated the field of invention; how wide a tract lies still unexplored, pregnant in rich productions, and fertile in the most useful discoveries.

It was an observation of the great Lord *Bacon*, that "ignorance is not near so great an hinderance to knowledge, as the conceit of knowledge." Thus for instance, *Kircher's* notion of magnetical fibres in the earth, might make a man fancy he could account for the verticity of the loadstone: and Mr. *Blond*, a countryman of our own, advanced something very plausible about variation; for he supposed there were two magnetical poles, which terminated an axis inclined to that of the earth, from whence it would follow, that under the same meridian the variation would be the same. But as experience shews the conclusion false, reason tells us that his account of the matter could not be true. It was the misfortune of the Ancients to have so high an opinion of their own knowledge, as to charge upon Nature, or the conduct of Divine Providence, those defects which after ages have proved to be, with more propriety, ascribed to their own self-sufficiency: thus, for example, they conceived, contrary to truth, the greatest part of the globe to be uninhabitable; and for that reason, pronounced those discoveries impossible which the industry of succeeding ages has explored; whereas, with respect to the deficiencies confessed by the Moderns, they are really so many steps gained upon knowledge, of which the Ancients had not the least conception; and tho' we may not yet have attained to them, which is a misfortune; yet we know what they are, and in some measure how they may be attained, which is a great felicity.

The *Russian* boors would rather have lost a limb than their matted beards, had not power and artifice got the better of the troublesome habit of wearing them in a frozen country. So frequently, when a new invention is proposed, those who are already

already superannuated in habit, are not always the first to approve the thing themselves are the most availed by and in want of; nor will they always examine its merits, or consider the benefits they may derive from it, or inconveniencies or dangers which constantly attend the want of such a contrivance. If they think at all about it, their whole attention is too commonly employed to create doubts, and to raise objections, that they may throw impediments in its way, and hinder its advancing into use, shewing themselves by this conduct more solicitous to urge reasons in favour of drudging on in their old way, thro' disasters and difficulties, than willing to avail themselves of it with that candour, more consistent with their emolument and its merits.

When a discovery is proposed, to which no inconveniencies can be fairly objected, when experiment insures success, reason enforces, and necessity cries aloud for succor; why it should be received with indifference, much less with reluctance, may perhaps be better demanded of prejudice than of reason. Can objections be fairly started, let them rise: after duly weighing it with impartiality, should the disadvantages certain to ensue from it, preponderate over the benefits proposed by it, then it will be time enough to reject, and remand the project into its pristine obscurity. But if the objections be but the evil efforts of prejudice, or intellectual imbecility; then, should the discovery be left to die in its infancy, for want of the help it craved and deserved? would not such a neglect be a mockery to merit, an insult to reason, a wrong to mankind, now in being, and cruelty to them who come after?

It is no inconsiderable part of men who do not think for themselves, or who are not merely indebted for their opinions to the testimony of their own senses: the multitude, caught with a false cry, do frequently join the clamour of popular applause or invective, with zeal or fury alike indiscriminate; as rumor prevails, true or false.

Discoveries that are, or can be, of benefit to mankind; tho' they may, when brought to maturity, appear simple and of no extraordinary cunning; yet, as in mechanic arts, simplicity is one degree of perfection; the very reason for which they may be vulgarly thought of no estimation, will, with the prudent, be a strong argument why they merit applause. They are not, whatever they may appear, the fruits of quick growth, or produced from every uncultivated soil. Tho' the magnet might be first brought into use in navigation by an obscure *Neapolitan*; or an hint of the optic glass, might be given by two children in *Switzerland*: such accidents do not often happen; those were
but

but hints struck out accidentally for deeper wisdom to improve to maturity.

To bring the rude sketches of fancy into perfect form, a plan must be concerted, inductions produced and examined, circumspection remembered, errors discovered, defects rectified, superfluity abridged, deficiency supplied, experiments repeated, and inconveniencies remedied, before we approach perfection; and even then we should be cautious how we propose, till judicious and honest friends have been again and again consulted; and still, I am sorry to say it, our labour is but half finished: we must impress conviction upon the minds and hearts of, I wish I could say, unprejudiced, mankind: *hoc opus, hic labor.*

However, though truth, when it deviates from probability, usually loses its credit in the eye of reason, it is for a short time only; but let it contradict or thwart prejudice ever so little, and very seldom shall it find favour before that partial tribunal: there is no security against its judgments; and it had been temerity to submit this small, tho' I am persuaded 'tis a useful, contrivance to the public, had I believed the empire of prejudice to be without bounds. But I hope it may with reason be supposed, that there are men whose public spirit and humanity have the ascendant over prejudice and sloth too; and wherever the sentiments of the heart prevail, I shall not need to appeal from that decision; for though the head may sometimes value the merits of another, as his thoughts correspond with its own, for self-adulation has its power, yet the dictates of a benevolent propensity, being more diffusive, will be so much stronger too, as to silence the tongue of opposition, and prevent its calumniating a design of such general utility as that proposed in the ensuing papers.

Those who are not willing, or have no occasion to use a proposal that may be of essential benefit to others, surely ought not, by their revilings, insinuations, or derision, to discourage others, who may stand in need of it, from being provided with such a security.—If the unfortunate perish for want of what has been thus sneered into discredit with them, surely they are murdered by ridicule! To discredit truths that may save mankind from destruction, is to destroy mankind*; propagating such errors is the most atrocious homicide, and, like that impiety which persuades the sick man to insult the Divine Munificence, by rejecting the salutary medicine his bounty has communicated, and drawing him to linger on, till obstinacy ag-

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gravates

* Nemo sibi solum errat sed alieni erroris, causa et auctor est, versat que nos & precipitat error, et alienis perimus exemplis. Senec. de Tra.

X INTRODUCTION.

gravates misery into suicide. It will therefore be the beneficent part, and that a good and a wise man will ever chuse, to persuade the seafaring people not to neglect so great a security as this here humbly offered. Pure humanity, if it has not an opportunity itself to produce any thing that is beneficial, gains the next degree of merit to that, by promoting the useful discoveries of others. Let it be remembered that it was not an angel of light that scattered tares where the good grain had been sowed.

It was prejudice which veil'd from the world, the name of him who first placed the rudder at the stern of the ship; anathematized *Galileo*, for asserting the earth's annual rotation; accused *Faustus* of sorcery; villified *Hervey*; banished *Columbus*; buried in oblivion his name who subdivided the compass; calumniated as a magician the great *Bacon*, who invented gunpowder, and discovered the verticity of the magnet.

Doubtless this contrivance, for preserving the lives of seafaring people in shipwreck, tho' not to be compared to any of those grand inventions, will have its opponents of equal malevolence, and I hope of equal success. Evil prejudice will only leave mankind, when they are no more.



THE

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[1]

THE
SEAMAN'S
PRESERVATION:

PART I.

Of the means and principles.

§. I. **W**HEN we consider the many accidents, which constantly endanger the lives of seafaring people, we are apt to pity the necessity of their fortune, which invades them with so many perils, and to felicitate ourselves upon our own, if it is so happy as to enable us to avoid the hazards which they risk, by being perpetually suspended on an element so contrary to their existence, that they perish in it in a very few minutes, except art can give succour to nature, and even that is but for so short a time, that the strongest, most expert swimmer, soon expires in the billows of a tempestuous sea.

B

If

2 THE SEAMAN'S

If the ship dashes against a rock, runs upon a shoal, is stranded by a storm, starts a plank, founders, or takes fire at sea, too often every soul perishes. Every tempest brings destruction to many people on board ships; every lee shore is dangerous; fire is still more alarming. *Pliny* says of seamen, they are but three inches from eternity.

The *Turks* have a proverb which says, "the sea is the burial place of birds. The *Spaniards* say, "The bay of *Biscay* is the tomb of "*Dutchmen*": but what rock, what coast, what sand-bank, is not notorious for the destruction of *Englishmen*? What part of the wide ocean, what port, channel or river, but has yielded them graves without monuments? As people of commerce and enterprise, natives of the greatest maritime country on earth, no nation is so much exposed to the perils of water; and to none, therefore, can it be more proper to attempt, at least to alleviate those misfortunes. For as a maritime nation, none is more nearly concerned or benefited by any method that can be contrived to remove such discouragements from a seafaring life.

The frequency of misfortunes by sea creates such opinions amongst the generality, as are very far from being useful to maritime power; and are so well founded, as to get the upper hand of every argument a national inclination may be very willing to employ, for the removal of

P R E S E R V A T I O N. 3

of prejudice, and excite every agreeable notion in favour of a seafaring occupation, as he knows it is the most popular employment.

Whereas at present, even travelling by water is almost universally disliked; and seldom chosen, but when necessity has the ascendant over inclination. Every scheme, then, where the impracticability of hypothesis does not preclude its encouragement; every scheme which tends to make the occupation of such a national science more secure, and to subdue those fears, which have hitherto injured that employment, ought surely to be strenuously adopted, or at least, to coniliate so much approbation, as to gain it fair trial; if it should succeed, the seafaring business will, as inconveniences vanish, and as obstacles or dangers disappear, naturally become more popular, seamen will be more numerous; and the many fine ships that are now idle, for want of mariners, will either go forth a terror to our enemies, or a profit to ourselves. The same policy which gives rewards for the encouragement of sailors, behoves that state to obviate all terrors, which may be suggested against the seafaring life; and it is as proper to encourage every art which tends to that national purpose, as to reward naval merit with naval gratuities.

Since the 1st of *January* 1758, from a cursory account taken of them, it appears that one hundred and fifteen vessels belonging to *Great-Britain*, have been destroyed by storms, and other

fatal accidents of that kind. As several of these were ships of considerable bulk, value, and proportionably mann'd, we shall not so much wonder, if moderately calculated, the people who perished in them, amount to a very great number. Allowing each vessel its proper complement of hands, and the number of passengers, some of them certainly had on board, I found them 2360. Had I been more exact, I fear the result would have been less favourable to a tender heart. The loss of so many men, by every judicious thinker, will be deemed as a much more national, as it is a more irreparable one, than the destruction of an hundred and fifteen vessels.

The concern which those accounts excited in the author of these papers, made him very anxious for a long time to discover some method, or at least to give motion to a discovery, by which passing on the water might be made more safe, and, with justice, less dreaded, by which some of those calamities might be prevented, and all expeditions on that element, more agreeable from the pleasing confidence of self security: for nothing discourages people so much, or so strongly prejudices them against the sea, as the frequent reports they hear of shipwrecks and men drowned. If the weather is tempestuous, how well the apprehensions of compassionate persons are founded, the frequent accounts of naval calamities testify. But if a
friend

friend or relation is exposed in that dangerous juncture, he who feels from affection, is equally sensible with him who is really in danger. But this terror has a worse consequence, and not only gives them an abhorrence to the sea, but propagates notions that may deter others. And parents endeavour to stamp on the tender minds of their children such impressions of dread and horror, at a maritime life, as their future years hardly obliterate; such as little favour our naval prerogative, and it almost insinuates a doubt of parental affection, if a youth is permitted to go on a voyage. Could such apprehensions as are inoculated upon their infancy, and grow up with them, be once eradicated from the minds of people, doubtless the seafaring employment would soon become very popular, and, would not only be esteemed the most agreeable, but, the most desired of all others; seamen would therefore multiply, navigation improve, commerce would diverge, inconveniences would diminish, wealth increase, and knowledge stand a fair chance to be extended. And as we have already the greatest power, that perhaps, ever vindicated maritime empire, we should have such inexhaustible resources of seamen, that would insure our naval superiority, and enable us to maintain with dignity that great prerogative against the confederated attempts of the universe. If we have this power, whether from nature, policy, spirit or industry, it behoves us to strive

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to fix and secure it by every commendable effort of art or science.

§ 2. Though art has, hitherto, been found ineffectual, in its attempts, to preserve vessels from perishing on accidental rocks, sands, uncertain coasts by storms, starting of timber, or foundering at sea: it will be an happy thing, if any method can be proposed, of certainty, to save the lives exposed in those terrifying emergencies.

Unequal as I may be to so important a task, I resolved to use my endeavours to put in motion, at least, a beginning towards this great end. As a desire to alleviate the inconveniences, terror, and dangers of seafaring mankind, was the motive that influenced me; that satisfaction, the thought of having done some good in the world may bring with it, will be ample reward. Whoever ascribes other views to me does me injustice. I wish them no other punishment, than to be convinced of that truth.

§ 3. To make sailing therefore a less hazardous occupation, and to abate the apprehensions of danger, by insinuating a well-grounded confidence of self-security, I thought it very possible to construct a machine that would, without inconvenience, support a man, and bring him safe to shore, though the vessel were destroyed by fire.

PRESERVATION. 7

fire, or cast away This I purposed to effect, by the help of cork.

§ 4. Considering how ineffectual boats generally prove in those calamitous junctures, made me still the more intent upon bringing my purpose to maturity; that the lives of men, in such unfortunate extremities, might not be exposed by such a precarious dependance, to almost inevitable destruction.

§. 5. After several contrivances for this purpose made, experienced, and rejected, I at length concerted a jacket (as described in §. 13. and fig. 1.) interlined with cork; of a very simple structure, and easily made. Yet answering all the ends I could desire, incontestably more secure than any boat, and so manifestly superior to all other resources, such as are commonly hastily caught at, in the extremity of shipwreck, as not to admit a comparison. For without being sanguin, I may venture to pronounce, as I do from knowledge and experience of it, that it is a certain support and security in the water, and, in all probability, in the most terrifying emergencies by sea, were men thus accommodated, not one could possibly be drowned.—As will be farther proved in a more proper place. So likewise this machine, and its manner of use, shall be more particularly described.

§. 6. I have found by experience, that the human body is specifically little heavier than salt water; therefore would naturally swim, was it not impeded by wet clothes, or sunk by fear, and strugglings made ineffectual by their perplexity, which thereby soon debilitate and overwhelm the person that is in distress.

§. 7. It is very possible, by the help of a small quantity of cork, to enable a man to float many hours; even though he could not swim, he would, by this means, be superior to the best artist at swimming, who had not such a provision of cork to support him. If the man that swims is taken with the cramp, a sudden fit of any sort, or becomes tired, especially if he has far to swim before he recovers the land, and his strength begins to fail, his life is endangered; from whence it pass into a maxim in some places, that "more people are drowned from having learned to swim, than for want of that art; and that more perish in the water who can, than who cannot swim:" fear preserves those that cannot swim from danger; and confidence of their skill, betrays those who can into it. But it is a foolish and inconsiderate boldness, that makes even the best swimmer to go out of his depth, except through necessity; there may be a juncture when it is commendable. It is plain then, that the man in the jacket who cannot swim, is much safer

PRESERVATION. 9

safer than the swimmer without that contrivance; but the swimmer has the advantage of both. The first is a man in a boat without oars; the second, a man who has oars without a boat: but the last is equipped with both boat and oars, with this additional advantage, that his oars cannot escape him, or embarrass by the force of any surge, nor can any swell upset his portable boat.

§. 8. Here perhaps it will be asked, how a man, though he was accommodated as is here proposed, can possibly be saved from danger in time of shipwreck, &c? His ability merely to support himself above water will avail but little, if he cannot proceed to the shore, he will perish upon the surface of that element by hunger and cold, and so protract a scene of misery, which otherwise would more desirably come to a speedy conclusion. But it is well known to seafaring people, that a ship is always wreck'd on or near a lee-shore, the waves must therefore, of consequence, drive upon the nearest land: so that all a man has here to do, when cast away, is to support himself from sinking; and the winds and waves which set against the shore, that is most adjacent, will certainly land him upon it.

§. 9. Men generally endeavour to lay hold upon a piece of timber (the boat is sometimes staved or dashed to pieces, and sometimes not to be

be got to action) therefore such poor resources in extreme emergency are gladly seized, though they often prove a treacherous dependance. For admitting the setting of the tempest drives all the pieces of timber on shore, this reliance is only the resource of despair, and proceeds from the dictates of the last extremity and necessity, very few people are saved by this method: for though they can possess themselves of a mast, yard, empty cask, or some such buoyant substance, it is very difficult to retain them, without a laborious and perpetual struggle; sometimes the unfortunate, upon such things, are carried off by the winds, or borne away by the billows, and very often are they drowned by the rolling over, and tossing of the very lumber they were compelled to rely upon for their security in that

Terrible distress, where human life

Twixt hope and fear maintains a doubtful strife,

P R I O R.

§. 10. That the security of the cork jacket is vastly preferable, and more to be depended upon, than that of a boat in a mountainous sea, among rocks and pieces of wreck, is almost self-evident, and precludes the necessity of demonstration. If we only consider how liable a boat is, (in the great confusion and difficulty of unshipping in the extremity of shipwreck) to split,

PRESERVATION. 11

to be damaged or broken, and rendered useless, or in plunging in a rough sea, to be irrecoverably overturned; it may also be dashed to pieces by floating timber, sunk, overset, or driven on a rock by the billows: but if it escapes these accidents, it does not rise to mount every surge with such boyancy as the cork jacket, and by receiving a swell, often carries the men over-board; so also if the waves are frequent, strong and impetuous, a boat must founder or burst through, because her length will sometimes more than intersect a wave; its middle part, at that juncture, being the centre of gravity, it is often burst in that part; or if the waves are near each other, that part bearing least, is then again most liable to damage. And if a boat in a rough sea is not steered so, that its head points full against the swell or billows, as it sometimes is impossible for the best steersman to do, then it is overset by a wave coming upon its side, and every person is turned over-board. But the common practice is to get upon a mast or yard in such emergencies; but these are subject to as many, or more misfortunes, than even the boat; they are perpetually rolling over, and instead of mounting, always pierce through the billows with their points foremost. And a mast being longer than the valley of water, that parts one wave from another, is in breadth; instead of rising over the mountain, it penetrates through the midst of it, whereby the people are generally washed

washed off their hold, if they are not lashed or tied to it, and in that case they are almost as much below as above the surface, so that they are frequently found dead upon the shore, tho' they swam upon pieces of timber. A gentleman who was cast away, being lashed to a mast for his safety, was, after forty-eight hours, brought to the shore, but in such a condition, from the many submersions he received by the perpetual over-rolling of the mast he was fastened to, that when he was taken up, it was a matter of great doubt if he could be recovered, which he happily was. He is a very worthy divine, and the account, as he has frequently told it me, may I am in no doubt, be relied on, as a proper illustration of our argument, to urge the utility of the jacket, preferable to all other contrivances.

§. 11. An invention designed for general use, and indiscriminate good to mankind, should preserve the utmost simplicity and plainness in its construction, that every body may make it; it should be easy of charge, not subject to disorder or accident. And it ought not to require any singular dexterity or address in its application or management, that no inconvenience may exclude the meanest in fortune or capacity, from the benefit of its assistance in time of exigence or extremity.

§. 12. My first idea was, that the preserving the lives of people in the extremities of shipwreck, might be effectuated by pieces of cork only, fastened by a girdle round the waste: but after more deliberate consideration, I found these would be liable to many accidents, especially if improperly adapted, and would by their prominent edges opposed to the water, impede the progress of the swimmer, and might be brushed off by the violence of the waves, or be liable to elude him, though more care had been taken to prevent such an accident, than the urgent juncture of a ship's sinking can be supposed to admit. Therefore I thought that a jacket made of some sort of linen, or other substance, that would not imbibe much weight of water, might be contrived with plates of cork lined and sewed in it, so as to answer the purpose much more compleatly than floats could do, and without any of their inconveniencies attending it.

§. 13. (see plate 1. fig. 1.) I ordered therefore a jacket to be made of thin sailcloth without sleeves. I then procured four pieces of good found close cork, each piece three quarters of an inch in thickness, and six inches broad, measuring in length sixteen inches; these pieces being naturally hollow, or in some degree convex on the inner side, when smoothed a little with a knife, were so fitted, as to be very easy to the
body,

body, after which they were sewed fast to the inward side of the jacket, corresponding to its four several quarters.

§. 14. This jacket may be fastened on with leather thongs, or pieces of sheeps gut dried. But as the tying would take up some time, and expedition is necessary, buttons made of fine close cork will be much preferable; they are not only more ready in urgent emergency, but more to be depended upon, with the still greater advantage of communicating to the jacket an additional buoyancy, without incumbering, and they will be no increase of charge, for three may be made out of one sound bottle cork.

§. 15. My first experiment was not in a very deep water; but I soon found any apprehension of danger from that element, when I had my jacket on, was very ill founded. With the utmost efforts my art or strength could exert, I was convinced it was in vain to attempt to sink myself under the surface; and though I staid an hour in the water, I could not perceive that the buoyancy of my machine was in the least decreased, but, to my perception, it was as vigorous as at the first plunging in.

§. 16. I therefore immersed the jacket for twenty-four hours; after which it had not imbibed so much water as to prevent its buoyancy,

or

or disable it from supporting me very safely and conveniently; and yet it was in fresh water, which penetrates more, and insinuates more subtilly into any substances, than the salt water does, which is of a more viscid and clammy consistence. This experiment, it may be observed, was made in a river, and a part of it that was not very deep, for I cannot swim. I therefore did not think it prudent to venture where it was deep enough to drown me: and consequently, as it was a shallow water, it was neither so buoyant as the same depth of salt water, or as a deeper body of fresh water would have been. For it is well known, that the buoyancy of fluids depends upon their specific gravity; hence it is, that lead swims in quicksilver, and copper in lead; brass in copper, and iron in any of them. So a greater body of fresh water derives more buoyancy from its own specifically greater weight, and makes a resistance in proportion. As therefore salt water is specifically heavier than fresh, as 47 is to 41, so in the same proportion it is more buoyant.

Aristotle says, this difference betwixt sea-water and simple water, depends upon the greater abundance of gross and earthy particles with which it is impregnated, as well as with those of salt. Salt, by the same author, is said to abound with oil: experiment has sufficiently ascertained the truth of this doctrine to modern chemists. *Plutarch* is of opinion, that “ the adhesive qua-
 I “ lity

"lity of salt water is derived from an oiliness
 "inherent in it, which he thinks evidently prov-
 "ed from its rather increasing, than extinguish-
 "ing the fire it is thrown upon," and candles
 dipt in a solution of salt, burn the better, if
 we may believe that philosopher. Sir *Robert*
Boyle, perhaps more to be minded than both of
 them, supposes the superior weight of sea water to
 the common water absolutely owing to its salt al-
 lone. He affirms, it is heavier in proportion, as it
 is nearer to the equator, till within 30 degrees,
 and all at that distance in weight is equal. *P.*
Claudio ascribes the elasticity of salt water to the
 same cause. Its weight indicates its elasticity,
 as that seems to be the cause of the buoyancy of
 water. Be this as it will, it is rather matter of
 speculation than use to the present purpose; only
 it may be just observed, from the opinions of
 these wise men, that salt water is heavier than
 the fresh; its accession of weight is derived
 from its particles of salt, so its elasticity ap-
 pears to be derived from some secret, though
 mechanical disposition of those particles reciprocally
 attractive by nature, and adhering by that
 petrolious or bituminous viscid, said to be in
 sea water. However it be, from all these con-
 curring causes is owing the superior buoyancy of
 that of the sea, to that of simple fresh water.
 A thing well known by experience to every
 swimmer.

§. 17. The cost of the jacket can never be an objection, for any person may make it. A piece of old canvass, and a pound of cork wood, the whole materials; so that the seamen would very easily do the workmanship themselves, when on board, at vacant intervals. And as they are generally pretty ingenious mechanicks, I doubt not but they would improve this machine to the greatest nicety and perfection, and in a very short time it would come into general use, if a proper beginning was duly encouraged. The jacket thus accommodated for use, cost me 2*s.* 6*d.* for I had only one made, a number would be made much cheaper; and I imagine fifty men might be fitted with this security for about 5*£.* It weighed, when dry, one pound and a half; when it had lain in fresh water twenty-four hours, it weighed one pound, and fourteen ounces.

§. 18. The pieces of cork used for this purpose should be the least porous or honey-combed possible. Let them be close, firm, and of that elastick dry compactness, which is observed in the finest bottle corks; I mean, those commonly called *Belvidere* corks. In this it will be proper to be very exact, because the less porous the cork is, the longer will the jacket support the swimmer, as it will imbibe in the same space of time a much less quantity and weight of water.

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The cork that is compact is also the strongest, and most able to resist accidents ; it would be a sort of breast-plate or armour to defend the breast of the seaman, whilst his hands were employed to guard his head from being wounded against the asperities of rocks, or by floating pieces of timber and wreck, against which he would be liable to be dashed by the impetuosity of the surges, for many men, in shipwreck, who could swim to shore, perish by being urged with violence on the prominent points of rocks, or by blows received on their backs, defenceless whilst they swim, from pieces of ship-timber. When fatigued with long swimming, a small blow makes them sick, and they must, in such circumstances, inevitably perish. It therefore appears, that the cork jacket would not only support in the water, and carry a person safe to shore, but defend him from the accidents of swimming among timber violently agitated by the storm, and also those to which he is subject in landing.

§. 19. This jacket will fold up so, as to occupy but very little space ; which I mention, least any one should object, that if every man on board a ship was to carry his cork jacket, their bulk would be very inconvenient, on account of the stowage required for them ; but a moderate sea-chest will contain a hundred conveniently.

§. 20.

§. 20. It might be better to have one chest appointed for them, and placed in some very convenient and ready part of the ship, than to let every individual have the care of his own jacket, for obvious reasons, but particularly to prevent confusion in their extremity.

§. 21. I believe no judicious person will suppose, that with these jackets provided and ready, there would be doubt or difficulty of saving the lives of the whole ship's company, though the ship should be foundered, wrecked, or consumed by fire. And as it prevents the possibility of sinking, I believe every man, properly convinced from experiment of its usefulness and safety, would not hesitate to prefer the security given by the jacket, to the very precarious dependance of the best boat in a tempestuous and rocky sea.

A boat in a stormy mountainous sea is liable to be overturned, and as the seamen term it, cannot live, may be staved on pieces of timber, split upon rocks, or the people in it destroyed by many other accidents; but the jacket is subject to none of them: it is portable, ready at hand, and quickly accommodated, and endangered by neither winds, waves, shoals, or rocks.

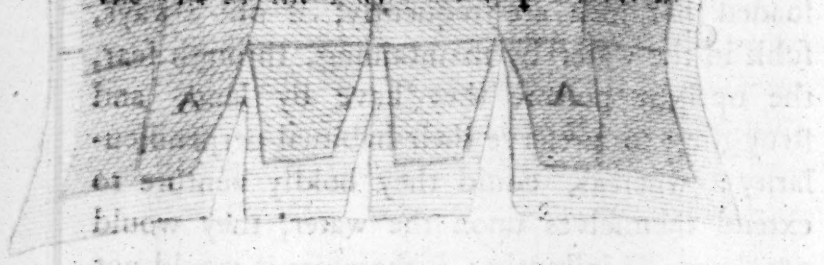
The boat is very unwieldy to the efforts of men already perhaps spent with toil and hard-

ships ; many bruised and wounded in the general confusion, all disanimated at the insurrection of dangers and calamities that threaten on every side, all attempts discouraging, no hopes but destruction ; men in such a situation are very unfit for labour, yet labour they must, and stoutly too, to bring their boat into action, the last resource for preservation. The jacket, on the contrary, is at hand ; a more certain, I had almost said a certain security, and no inconvenience, except that it may be more cold than a boat, which cannot be much warmer indeed, considering how subject it is to be filled with water, and the men in it almost as much wet as if really in the sea. But as the sea-water does not give people colds, its oiliness or viscosity closing the pores of the body (*vide Plutarch's Symposiasts*) so the jacket, in this respect, would not be more inconvenient than the boat : I am in doubt, if it would be nearly so cold. Even though it is necessary, for the person who takes the jacket, to throw off all clothes, especially woollen ones, if the urgency of the extremity will permit, and this is the only precaution necessary to the use of the jacket. Where it can be had, indeed, a dram of some sort of spirits, if ever of use to men, will certainly be so at the juncture of leaving the sinking ship, it will repel and prevent the injuries of cold.

§. 22. It is objected to the cork jacket, that tho' it will certainly support the body, floating upon the surface of the water, yet the legs of a person who cannot strike as swimmers do, will hang down in a disagreeable and inconvenient manner; whereas the whole body of a person that swims, ought to lie stretched out upon the water at full length. Though I am not aware of any singular inconveniency that may accrue from this position of the legs; yet, it is an objection; all bodies being found to swim with the most activity and command of motion, in an horizontal posture, or nearly parallel to the surface of the water, as is manifest, not only from the experience of those men who can swim, but also from quadrupedes: those which swim with the most celerity, keep that direction; and those which swim worst, in a more upright posture. I am persuaded that men are frequently, if not always, sunk in the water by maintaining, through fear, the upright posture they have by land, and struggling to preserve their habitual perpendicularity: whereas, could they boldly venture to extend themselves upon the water, they would not drown so instantly: if therefore it would not embarrass too much a contrivance, already sufficiently secure without such addition, I do not doubt but, where circumstances would permit so much delay, great help might be gained, from

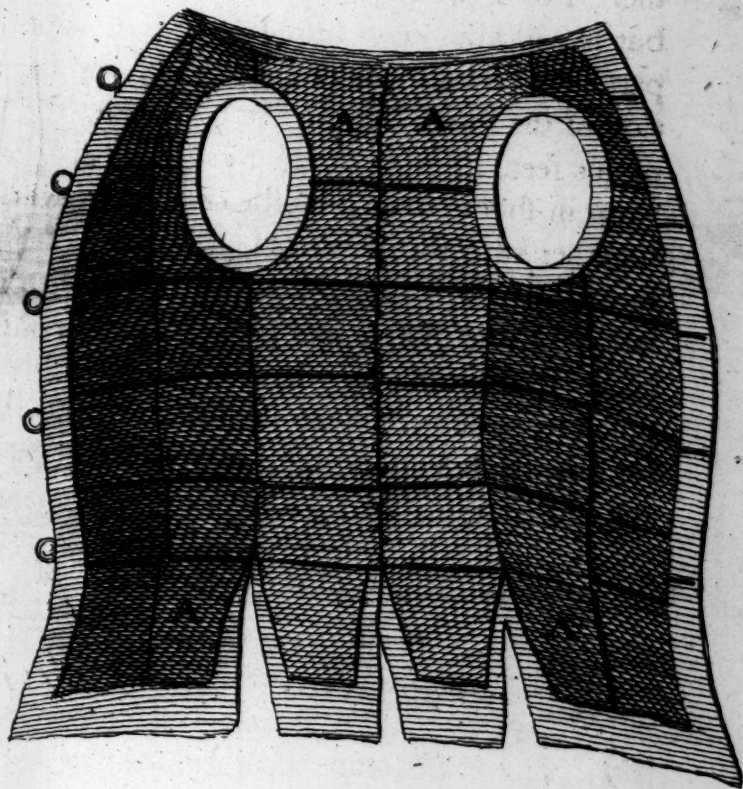
pieces of cork applied to the sole of each foot, by the buoyancy of which the legs will be conveniently supported in the same direction as the body with the jacket on.

Though not absolutely necessary to the safety of the swimmer, yet this addition may have its use. For it will not only expedite his progress, but it will also keep him sustained in a position parallel to the surface of the water; and the friction of the rough side of the cork upon the soles of his feet, as it is found by experience, when worn in shoes, to be a substance of great warmth, together with the perpetual activity of the legs in striking, will contribute to preserve the circulation of the blood, and prevent the inconveniences from cold, to which those may be supposed to be subject, who float in the cork jacket for any considerable time, as may sometimes be the case of those who are ship-wrecked.



THE

Cork-Jacket



Seamens Preservation



THE
SEAMAN'S
PRESERVATION.

PART II.

Some instances in which, had the cork jacket been used, the lives of many men would probably have been preserved.

§. I. **I**T is no easy matter for a father to recommend the virtues or excellencies of his child with decency and gracefulness.—Parental fondness may make him lavish of attributing good qualities where, perhaps, nature has been but sparing of those amiable endowments. When such an impropriety attends the praise, the hearer is offended at the ridiculous

eulogy. A parent may be allowed indeed, with proper modesty, to mention the genuine virtues that shine in the character of his son.—But if that character becomes endanger'd by unjust assaults, or if his future advancement requires but the help of a just and candid representation.—At such an exigence, surely the parent will not be blamed if he vindicates fairly, and represents honestly.

This observation holds good with regard to the offspring of the mind almost as strongly as with respect to the offspring of the body. A peculiar delicacy of expression is, nevertheless, required to enforce a proper conviction of the merit of one's own proposal.—And yet, if that merit be not merely supposed, but is perfectly real, and will stand the strictest test of scrutiny, then certainly the just and candid defence of it will not, I am persuaded, in the opinion of prudent and equitable judges, ever receive such a cruel construction, as to have that just debt paid to indisputable desert accused of being only the ebullition of vanity. The honest and sensible enquirer into truth will admit, that every man, who writes to explain the usefulness of a contrivance, acts equally the part of strict probity, by giving a true representation of the benefits derivable from his own, as although he
were

were speaking in the cause of another; and not to do this would be a criminal neglect of the opportunity, he has to open that truth upon mankind, which ought not to be lost in obscurity; and may engage them to a ready acceptance and encouragement of the means of such benefits.

§. 2. For the more full and perfect illustration of this subject, and to the intent that every circumstance, generally attending ship-wreck, may lie open to the reader's consideration, I will now beg leave to exhibit three important instances, in each of which (though perhaps the most unlikely of all others to favour this invention, from the particular contingencies attending them) it may seem manifestly evident, that the cork jacket would indubitably have saved many lives from perishing; these are not mentioned so much to enforce the merit of this machine, which is self-evident, as to explain, according to common conception, how it may, in like cases, be of singular use, under the precautionary regulations mentioned in this treatise; to shew what might have been done on those occasions; and what may be done hereafter, in such terrifying moments of calamity.

The VICTORY, one of the finest first-rate ships of war ever built, equipped at a vast expence, and
manned

manned with twelve hundred chosen men, foundered within nine leagues of our own coast, and not a man escaped to tell the tale. Had those unfortunate people been every one fitted with this simple contrivance, I think we may safely say it is highly probable, though perhaps the sea, at that unhappy juncture, ran very tempestuous, that at least a thousand of those brave fellows might have been now alive to fight their country's battles, and sing grateful encomiums upon the cork jacket. The loss of this fine ship was indeed deemed a national calamity: but as seamen are the most valuable part of a maritime community, we should not have regretted the loss of the ship, had the crew been saved.

1. With gallant pomp and beauteous pride,
The floating pile in harbour rode,
Proud of her freight, the swelling tide
Reluctant left the vessels side,
And rais'd it as she flow'd.

2. The

2. The waves, with eastern breezes curl'd,
Had silver'd half the liquid plain ;
The anchors weigh'd, the sails unfurl'd,
Serenely mov'd the wooden world,
And stretch'd along the main,
3. The distant surges foamy white
Foretel the furious blast ;
Dreadful, tho' distant was the sight,
Confederate winds and waves unite,
And menace every mast.
4. Winds whistling thro' the shrouds proclaim
A fatal harvest on the deck ;
Quick in pursuit as active flame,
Too soon the rolling ruin came,
And ratify'd the wreck.
5. Stripp'd of her pride the vessel rolls,
And as by sympathy she knew
The secret anguish of their souls,
With inward deeper groans condoles,
The danger of her crew.
6. Now what avails it to be brave,
On liquid precipices hung ;
Suspended on a breaking wave,
Beneath 'em yawn'd a sea-green grave,
And silenc'd every tongue.

The

7. The faithless flood forsook her keel,
 And downward launch'd the labouring hull;
 Stunn'd, she forgot a while to reel,
 And felt almost, or seem'd to feel,
 A momentary lull.

8. Thus in the jaws of death we lay,
 Nor light, nor comfort found us there:
 Lost in the gulph and floods of spray,
 Nor sun to chear us, nor a ray
 Of hope, but all despair.

Dodsley's Collection.

It is said, by some authority, that the *Victory* sunk about nine leagues from the Start Point: admitting that it was nine leagues from the nearest land, it would have required no great art or management for every man, who was provided with a cork jacket, to have gained the shore, and saved his life.

§. 3. About nine months ago the *Prince George*, a fine ninety gun ship of war was destroyed by fire; and of all the company, amounting to 745, only 260 were saved.

The following letters and extract will give the best idea of this calamity, and also shew how far the cork jacket would have been useful in that unhappy juncture.

Letter

*Letter from the master of a merchantman, under
convoy of Admiral Broderick.*

*Thursday, April 13. Ushant bearing East,
sixty leagues distance.*

“ A T noon I saw admiral *Broderick* hoist a sig-
“ nal of distress ; upon which I made what
“ sail I could, and went down on him. At one in
“ the afternoon I discerned the *Prince George* on
“ fire ; at two drew pretty near her, but thought
“ they might have quenched the fire. At three
“ o’clock I saw plainly there was no quenching it,
“ I was within a hundred yards of her stern, but
“ durst not venture along side, the sea beating
“ high ; besides the going off of her guns, and
“ danger of blowing up. At four in the afternoon
“ the admiral was taken up swimming by a mer-
“ chant ships boat, as then the ships that had boats
“ were all out, and a good many of them lost.
“ The weather proving bad, towards night I was
“ within pistol shot, and there remained some
“ time, and picked up four of her crew ; and
“ had not two of my men run away with my
“ boat the night before we sailed from *St. Hellens*,
“ I am confident I could have saved sixty or
“ eighty of them at least, as I was all the time
“ nearer them than any ship in the fleet. What
“ made me venture so near was, that I knew
“ my ship went well, and was under good com-
“ mand.

"mand. At six what a dismal sight! the masts
 "and sails all in a blaze; hundreds of souls
 "hanging by the ropes along side. I could count
 "fifty of them hanging over in the stern lad-
 "der, others in the sea on oars and pieces of
 "wood, a melancholy spectacle! besides the dis-
 "mal cries from the ship, which still ring in my
 "ears. Half an hour past six the flames broke
 "out at her broad side; and in less than five mi-
 "nutes every bit of her was in flames, and so
 "continued till seven, when she overset, but did
 "not sink. I then ran within twenty yards of
 "her, but my people compelled me to go farther
 "off, for fear of striking on the wreck. All I
 "can further say of it, there never was a more
 "shocking sight; pray God that I may never see
 "the like again. It was very grievous to me
 "that I could not save more of her men, with-
 "out running the risk of sharing her fate."

Letter from Mr. Parry, an Officer.

"A Bout half past one at noon, being in the
 "office adjoining to the cabin, I saw the
 "admiral run out with two or three officers; on
 "enquiring the cause, I was alarmed with the
 "ships being on fire forward, and it was believed
 "in the boatswain's fore store room. About half
 "past two we made the signal of distress; but to
 "render our situation more wretched, the fog
 "came

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“ came on very thick, and the wind freshened,
 “ and it was near four before the *Glasgow* and
 “ *Alderney* got intelligence of our condition;
 “ when they repeated the signal, hoisted out their
 “ boats, and stood towards us; but they not
 “ knowing we had taken care to float our pow-
 “ der, were under sad apprehensions we might
 “ blow up, and therefore could not (consistent
 “ with their own safety) give us the assistance,
 “ our deplorable condition rendered us so much
 “ in need of. About half past four the smোক
 “ increased, and the flames began to break out.
 “ The admiral then ordered the boats to be
 “ hoisted out, got the barge out, and went off,
 “ promising to bring a ship along side of us. In
 “ a few minutes after, I saw her sink at some dis-
 “ tance a-stern, and not above three or four were
 “ saved out of near forty, among whom it pleased
 “ God to preserve the admiral. The weather was
 “ now become clear, but none of the merchant-
 “ men would come near us. About a quarter
 “ before five, captain *Payton* left the ship, and
 “ promised, as the admiral, but was not able to
 “ accomplish it. About five the long boat was
 “ attempted to be got out, in which were near
 “ a hundred people; but as they were hoisting
 “ her out, one of the tackles gave way, by which
 “ she overset, and almost every soul perished.
 “ We were now reduced to the greatest distress.
 “ You may have some idea of our miserable con-
 “ dition,

“dition, when I tell you the ship began to be in
“flames fore and aft, spreading like flax, people
“distracted, not knowing what they did, and
“jumping overboard from all parts. I was re-
“duced to the melancholly choice of either burn-
“ing with the ship, or going overboard. Very
“few that could swim were taken up; and I
“that could not swim, must have very little
“hopes indeed. About a quarter past five I
“went into the admiral’s stern gallery, where
“two young gentlemen were lashing two tables
“together for a raft. I assisted them; and one
“of them proposed to make fast the lashing to
“the gallery, and lower ourselves down to the
“tables, then cut the lashing, and commit our-
“selves to the mercy of providence. We hoisted
“over the tables, but being badly lashed, one of
“them was lost; as soon as the other was down,
“I proposed to venture first, which they readily
“consented to; there was now three boats a-
“stern: this was the time or never: down I
“went by the rope, but as there was a great
“swell of sea, it was impossible for any one to
“follow me, and I was turned adrift. By the
“cries of the people from the ship to the boats,
“in about five minutes I was taken up very near
“drowned.”

Extract

Extract from a midshipman's letter.

“ **T**HE fire still increasfing, we were obliged
 “ to hoift out our boats, which, from our
 “ confufion, were near three hours fixing to the
 “ tackles, &c. every body being engaged in pre-
 “ paring to fave himfelf. The poop, ftern, and
 “ quarter gallery, with the fides, were lined
 “ with men and boys, crying out in a moft mov-
 “ ing manner to be affifted. During this time,
 “ out of twenty-three fail of fhips, we had but
 “ three boats to our affiftance, and thofe would
 “ not come near the fhip for fear of being funk,
 “ the poor fellows continually jumping over-
 “ board; great numbers of whom were drowned
 “ in our fight.

“ We got our boats out, which never returned
 “ after going once. By this time the fire had
 “ communicated itfelf to the middle gun-deck,
 “ and nobody could go down below, every one
 “ expecting his death each minute, either by fire
 “ or water, and were taking leave of each other.
 “ Soon after going out of the admiral's cabbın,
 “ I faw the flames coming out in the hatchway
 “ of the upper gun-deck; I returned immedi-
 “ ately, and took my leave of the petty officers
 “ that were there, and went over the the ftar-
 “ board ftern ladder to fave myfelf by fwimming,
 “ and, thanks be to almighty God, reached a
 “ boat and was taken up.

D

“ I had

" I had just got clear of the ship when the
 " flames became general, and those poor unhappy
 " wretches who could not swim, were obliged
 " to remain upon the wreck, with the fire fall-
 " ing down upon them. Shortly after the masts
 " burnt away, and killed numbers; and those
 " who were not killed by the masts, thought
 " themselves happy to get upon them. But the
 " ship rolling, by reason of the great sea, the
 " fire had communicated itself to the guns, which
 " swept them off the decks in great numbers, they
 " being all loaded and shotted."

At the time of this striking calamity, the
Prince George was in company with a considera-
 ble number of merchantmen, some of them no
 great way from her, but too far for any to send
 relief, except by taking on board the poor rem-
 nant, that escaped by the help of their long
 boat. It appears, that most of the people who
 could swim to it were taken up, though it could
 not approach very near, the guns and explosions
 of the fire were so violent and dangerous. What
 ideas can any man conceive on this occasion, but
 such as are greatly favourable to, and enforce the
 use of the cork jacket? What would those wretch-
 ed men, left amidst the flames and horrors of a
 ship on fire, with certain death on every side;
 no resource, the alternative terrifying, fire or
 waves? What would men in such circumstances
 have

have given, what would they not have given, to have been enabled to quit the flames, and float on the water? This simple contrivance would indubitably have preserved the lives of multitudes of them, for the boats of the ships in company, would have had time enough to pick them up, when the ship's guns had ceased firing; nay, perhaps even the fire might have been extinguished, and ship saved, by means of these cork jackets.

The idea of self security, which this provision would have administered to each of the seamen, who are not the most apt of men to be dejected,

That serious evenness that calms the breast,
And in a tempest can contribute rest:

would have excited their utmost efforts, and given fair play to their art and strength, in trying every means to save their ship, till the very last extremity; certainty of safety would have given them not only vigour, but alacrity too. On the other hand, how must they faint and succumb under the ruin which appears inevitable; and what can human strength do, when disanimated by a prospect the more horrible, the more it is bereaved of all hope? The unexpected death they see on every side, unhinges their understandings, perplexes and confuses their endeavours, and makes ineffectual their attempts. All

D 2

thoughts

thoughts about reciprocal security and mutual help are lost and absorbed in those that indicate self-preservation ; they do not think of saving the ship, they are in fear for themselves. But whilst they are convinced that life is not in danger, discretion retains her seat ; their endeavours are animated by hope, their efforts are still rational, and it is probable they may prevent the ruin that impends. When life is at stake, property loses its value, and gives us no farther concern : but when convinced that is safe, this becomes a second care. Men in cork jackets would have this advantage, and would not despair of saving their ship, as long as any share of hope remained ; but the present practice is oft to leave the vessel to sink or swim, so the men but preserve themselves ; and this, I make no doubt, very often, when a little more courage and resolution would have saved her. But as the boats take much time to get into readiness, they are right to secure the main chance, poor as it is, in such extremities ; for they may lose the ship, after all possible endeavours, and if they delay to put them in practice, she may go down, before they can bring their boat into action, and save their lives.

Thus in confusion they their parts perform,
While fighting winds increase th' impetuous storm.

Now

Now start the planks, and leaves the vessels sides
Wide open to receive the conquering tides.
All tremble of their last defence bereft,
And see no hopes of any safety left.
No aid their oft successful art can boast :
At once their courage, and their skill is lost.
Helpless they see the raging waters come ;
Each threatens death, and each presents a tomb.

The third relation I will give, as it is so recent, may excite the more attention. And tho' some parts of the letter, as they were heightened by the sensibility of the relator, though they may appear so strange as almost to lose sight of probability, yet as they were not impossible, they may not be totally void of all veracity. I will therefore give it in his own words.

Extract of a letter from the Mate of an East-India ship, to his wife in Cartfadyke, near Greenock.

My dear,

“ **T** H I S is to acquaint you that I am yet
“ living, and I do not think there is on
“ earth a more remarkable instance of the great
“ mercy and goodness of God, than has been
“ shewn in my preservation, I hope therefore
“ you will cause what follows to be put in the
“ news papers.

D 5

“ Our

“ Our ship was about 900 tons burthen, man-
“ ned with a hundred lascars, or black sailors,
“ and navigated by a captain, four mates,
“ and a gunner, *Europeans*. We took on board
“ five hundred, merchants and other passengers,
“ going to pay their yearly devotions at Maho-
“ met's tomb, at *Mecca*; and sailed from *Surat*
“ in *India*, the 10th of *April* 1754, with a
“ cargo on board, valued at 200,000 *l.* sterling,
“ for *Moco* and *Jodda*, in the *Red Sea*, with a
“ good wind; and on the 18th, at noon, we
“ found ourselves in the latitude of 15 north,
“ and 9 degrees of longitude to the westward of
“ *Surat*. At one afternoon, may God preserve
“ me from the like sight for ever! we obser-
“ ved a smoke coming up through the deck in
“ the galley or forecastle. We immediately got
“ the fore-hatches off, to see where the fire was,
“ but the flame having vent, burst out with such
“ violence, that it burnt both the second mates
“ shirt and trowsers and mine, and having got
“ hold of the main stay-sail, in five minutes com-
“ municated itself to the rigging, and all the
“ sails of the ship. Our boats were all on board
“ but the long boat, and our rigging being on
“ fire, we could make no use of the tackles to
“ hoist them out. The lascars all ran aft from
“ the flames, and assistance we had none. I went
“ down to the powder-room, which was beaft
“ with the gunner, to heave the powder over-
“ board,

“ board, and whilst we were throwing it out, I
 “ observed the long boat cut adrift by the sail-
 “ ors, which was the only prospect we had of life,
 “ on which account I went up to the deck, and
 “ told the captain, that as the fire was so vio-
 “ lent, we had but two choices, to burn or
 “ drown. He, with his usual calmness, told
 “ me, he had seen me swim further in *Virginia*
 “ than to the long boat; and as it was death to
 “ stay on board, I might yet reach her, and
 “ save him and the rest of the *Europeans*. I took
 “ a cutlass in my mouth, and directly jumped
 “ over-board: at that time the fire had got the
 “ length of the quarter deck with such violence,
 “ that nobody durst go nigh it. I had so far to
 “ swim, that I was obliged to quit the cutlass,
 “ and swim for my life. At last I reached the
 “ long-boat, and going to use my authority,
 “ though I was beloved by the sailors, they soon
 “ let me know it was at an end, and told me,
 “ did I not see three or four hundred people
 “ swimming towards the long boat? that alrea-
 “ dy she was full; that they left their own fa-
 “ thers and brothers to perish, and could I think
 “ they would return to take in five infidels? on
 “ whose account Mahomet had burnt the ship:
 “ and though they should, would not every one
 “ strive to get in his own relations, by which
 “ they would all perish? I told them we had
 “ neither water nor provision on board, nor accom-

“ pass to steer by ; that we were two hundred
“ leagues from the nearest land, part of the
“ coast of *Malabar* ; but my remonstrance signi-
“ fied nothing, they were resolved to pursue for
“ it with oars, being ninety-six souls on board,
“ of which eight were black *Roman* Catholicks.
“ The ship blew up about eight at night with a
“ noise like thunder, and every soul on board
“ perished. We rowed forty-eight hours towards
“ the coast of *Malabar*, and then gave over. I
“ desired them to take their turbands (being
“ Moors) and stitch them with some rope yarn
“ out of the long-boats cable, which they did
“ with all expedition, and being a side wind, and
“ fair weather, we went always two or three
“ knots ; but from the want of sleep (conducting
“ the boat by the sun in the day, and the stars
“ by night) I envied the death of my ship-
“ mates who were burnt or drowned. We were
“ never hungry ; but our thirst was extreme.
“ The 7th day our throats and tongues swelled
“ so that we spoke by signs : on that day four-
“ teen died, and almost the whole company be-
“ came silly, and began to die laughing. I pe-
“ titioned God earnestly to continue my senses to
“ my end, which he was pleased to do, being
“ the only person, the 8th day, that had them.
“ On that day twenty more died ; and on the
“ 9th I spied land, which sight overcame my
“ senses, and I fell into a swoon with thankful-
“ ness of joy.”

As this ship was burnt so far as 200 leagues from land, it may be asked, of what service, would the cork-jackets have been here? Could men live nine days upon the jacket? Yes, it is replied, they might, if we only suppose the men to be provided with jackets, and the boat stowed with such provisions as are the most nourishing, and a proper stock of the best water must not be omitted: one or two people being appointed to direct the sail of the boat, and one to steer; these by turns, to relieve the men that swim upon their cork boats, as they shall find expedient, or as they want refreshment. The people in the jackets, must each have hold of the boat by a line, which by means of its sail, may tow the whole company along; and I do not doubt, but in such a case, a good many lives might be saved.

Nothing can have a ridiculous aspect, which concerns the saving the lives of mankind; and though it may seem at a glance, something whimsical, it becomes a matter of more serious and candid consideration, if we reflect, that this is the only way left for these unfortunate men to escape destruction: doubtless, in such an emergency, several would perish, even tho' accommodated with these helps, were they to remain many days upon the water. But it is also more than probable, that multitudes would be saved, because they might alternately be relieved by entering the Boat, as they found themselves constrained by fatigue,

fatigue, cold, or any accident. As urgent extremity presses for some method of succour; Men, in such circumstances, would think themselves very fortunate to be thus accoutred, rather than exposed to more dangerous alternatives. Till a better expedient is found out, for the relief of men in such distresses: I think all discreet seamen will adopt this, and desire its becoming a practice, for ships to be always provided with cork jackets.

While I was giving the accounts of these three fatal misfortunes, with which I intended to have concluded this second part, I find myself unhappily supplied with a fourth, which is this instant published, from a letter received at the Admiralty; as it is the more recent, it may urge the stronger conviction, in favour of the cork-jacket.

A copy of a Letter from Captain Barton, of the Litchfield man of war, stranded on the coast of Barbary, at a place called Veadaër, about nine leagues to the N. E. of Saffee.

Dated Dec. 4.

1759.

"I Am sorry to inform you, that on the 29th
 " of November, his Britannic majesty's ship
 " *Litchfield*, of 50 guns and 350 men, was cast a-
 " way here. We have lost the first lieutenant,
 cap.

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“ captain of marines and his lieutenant, with several officers and seamen, amounting to the number of 130; there are of us on shore, two of my lieutenants, and other officers and seamen, amounting to 220. It blew so hard when we came on shore, that the ship soon went to pieces, and we could not save, either provisions or other necessaries. For these two days past, we have been on shore, we have subsisted on drowned sheep, hogs, and water and flour hardened on the fire. A great number are lamed by the bruises received against the rocks, by the violence of the surf. The poor sufferers were extremely ill used by the natives, when they got a shore

“ P. S. The *Somerset*, a transport, with troops, and a bomb-ketch, which were in company with the *Litchfield*, are said to have shared the same fate.

I had not transcribed all these letters, as some of them only relate the same fact; but the circumstances, as variously observed, so variously illustrate the usefulness of the cork jacket, in so many different conjunctures of extremity. In the first of these letters it is evident, how ineffectual boats are, how liable to accidents, and how little to be depended upon. In the

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second, from Mr. *Parry*, we see the hazard and difficulty of hoisting out the long boat, very unhappily exemplified, in the loss of 100 men. And also the advantages of the jacket, by the instance of the raft made of two tables; in the midshipman's letter it appears, that by being able to float, many might have been saved; how ineffectual the masts are to that purpose. In the fourth letter, we may remark, that by the help of cork jackets, room might have been gained in the boat, for a store of provisions. And in Captain *Barton's* account of the loss of his ship, we see that the protection of shipwrecked seamen, from dashing against the asperities of rocks at their landing, which would be affected by the cork breast plates, appears to be a matter of greater moment, than we might have imagined.

It is the part of a wise man, to provide against misfortunes that may happen, before they arrive; it is the privilege, and mark too of reason, to be provident. By providing against accidents, we neither solicit them, nor shew a terror at them, discretion is prepar'd to encounter, before the attack is made. But a weaker mind is liable to surprise, because he thinks it time enough to bestir him when he sees occasion: unacquainted with the Maxim, "Venienti occurrere morbo."

—Sense—

— Senseless men,
In stupid dullness blest, are only happy ;
Still unprovided against threatening evils :
They ne'er reflect on miseries that may come,
Their solid comfort is their want of sense.

Smith's P. of Parma.



THE

THE SEAMAN'S PRESERVATION.

PART III.

*Instances wherein the cork-jacket may be of still
more extended benefit to mankind.*

§. 1. **I**N the first part of this treatise is explained, the method and principles of the cork-jacket; in the second, are given instances wherein it might with the greatest probability, if not certainty, have proved the preservation of multitudes of lives, which were lost by shipwreck, for want of such a provision. In this last part I will endeavour to shew, how far this contrivance may in some other respects be extended still farther, than merely to shipwrecks, for the benefit, preservation or pleasure of mankind.

§. 2.

§. 2. In naval enterprizes of various sorts, but especially in time of battle at sea, this contrivance might be of great use; as people by quitting a sinking ship, thus accommodated, would be readily taken up by a friend, or even an enemy. For men in the moment of such extremity, are too wretched to excite enmity; misfortune pacifies all. Compassion is stronger than revenge.

§. 3. So also this contrivance, might doubtless, be very frequently found of great utility when a ship is at sea, and has occasion to risk a man's life, by some dangerous business at her outside, or even at her mast-head in stormy weather, for should a man fall over-board in his jacket, a ship might bring too and recover him easily; this would be a much more certain expedient, than the common one in those cases, of throwing hen coops overboard, for the drowning man to catch hold on. Nay, the *Venetian* method, would bear no comparison to this of the cork-jacket.

The *Venetians*, have always upon their deck, a float of some very buoyant materials, with a small flag fixed to it, which is immediately thrown to a man that falls into the sea. But these are but precarious expedients, and it is a great doubt if the suction of the ship, does not sink the person, and confuse him already perplex'd with his danger, so as to make him incapable, if the float should be so fortunately thrown as to fall within
his

his reach, of grasping hold, and availing himself of it: or he may, as is very frequently the case, receive a blow or contusion by striking against some part of the vessel as he falls, that may disable him so much in body or understanding, as to incapacitate him from helping himself. The *Venetian* float being provided with a flag, is doubtless, a very judicious and proper contrivance; for by this means, the vessel is directed where to find the man amongst the waves. I would therefore advise, that seamen throw over something to be a direction for them in such cases, or that the person endanger'd, should have a jacket, which might be provided with some folding contrivance of this sort.

The jackets being always at hand, and in the readiest place; should a man casually fall overboard, some of them might soon be thrown after him for his support, till the ship can come about to recover him, which would save abundance of trouble and inconvenience attending the unshipping, and shipping the boat.

§. 4. It has been prov'd by the experience and evidence of many eminent physicians, that for all kinds of diseases proceeding from scorbutic, cacochemies, but particularly to overcome and eradicate inveterate scurvies; nothing has been found so effectual as bathing in, and moderately drinking the sea water. Many dissertations have been written

written to demonstrate its efficacy in those disorders. I have therefore frequently admired that seamen, of all others, should be the most obnoxious to them : for tho' it is said their food is salt, and therefore difficult to be digested, and apt to deposit salt in too gross parts thro' the animal system ; yet one would suppose the remedy always at hand, would soon recover them from those injuries. But it must be observed, that tho' the remedy is always ready, it is always neglected.

Seamen who can swim, do not care to venture into the sea, when at a distance from land : the cramp, some fit, sharks, and other accidents, may render their art useless : and those who cannot swim, have still a better reason for not venturing. But a man in the cork jacket would be in no danger ; his body would, in some measure, be defended and armed against ravenous fishes. A fish may always be seen at a good distance in the clear sea ; so that he who expected an attack, might either take a cutlass in his hand, or be drawn up into the ship time enough to secure himself.

This would also be a great inducement, in calm weather, for the men to bathe daily in the sea, which would keep them clean, give them alacrity, health, and vigour. There is, perhaps, no refreshment equal to a plunge in the cool seawater.

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§. 5. In

§. 5. In shipwrecks; but especially if a ship dashes to pieces, or founders suddenly, in the general confusion and terror which ensues such calamitous accidents: the boat heavy and unwieldy, many of the men too much struck and disanimated to lend a helping hand, the agitation of the ship in a violent storm, render it a difficult and perplex'd business to disengage and bring the boat to use; how dangerous, and what hurts and bruises are got in such a confus'd emergency; how many are drowned in striving to get into the boat; how insufficient when gained; and how very subject to overturn, and become their destruction, who depended upon it for safety; may be imagined more easily than described. See Part I. §. 9, 10.

Spite of the seaman's toil the storm prevails,
In vain with skilful strength he hands the sails;
In vain the cordy cables bind them fast,
At once it rips and rends them from the mast:
At once the winds the fluttering canvass tear,
Then whirl and whisk it thro' the sportive air.
Some timely for the rising rage prepar'd,
Furl the loose sheet and lash it to the yard.
In vain their care, sudden the furious blast
Snaps by the board, and bears away the mast.
Of tackling, sails, yards, rudder, boats bereft,
The ship, a naked, helpless hull is left.

Rowe's Lucan.

§. 6. This contrivance may have still a more diffusive utility; not only the seaman, but the soldier also may reap benefit from it; especially when it is thought proper to harraßs an enemy by invading their coast with the united force of landmen and seamen. For on such occasions, if a general is not very acute of circumspection, it may happen, that apprized of his intentions, and ready to give them the meeting, whilst he makes a rash and impetuous inroad, the enemy, avail'd of his inconsideration, falls upon the invaders, and repels them precipitately back to the coast, and presses upon their heels with such violence, that few can recover their flat bottom'd boats, for want of swimming; and very few escape slaughter, but those who surrender themselves prisoners with ignominy.

The soldier, in such circumstances, must either be made a prisoner, or slain, if he cannot recover a boat, though at a distance from him, out of his depth, and perhaps he cannot swim; yet he may be taken up and saved, by means of this small contrivance, and so easy of charge, that fifty men may be fitted with them for about five Pounds. See Part I. p. 17.

§. 7. Against splinters of ships and foul shot, sometimes used by an enemy in the time of battle, the cork jacket would be found to be no

contemptible defence. It requires a very strong push with a small sword to pierce through it, and to a broad sword, struck with great force, it is impenetrable. A ball from a pistol twelve inches in the barrel, the muzzle or bore five eighths of an inch diameter, loaden with 1 dr. 49 gr. of strong powder, made but a small impresson upon the plates of cork at the distance of 16 feet; being of a spongy elasticity, it repelled the ball at 20 yards, at 16, it only just past through, but at 10, the cork was pierced with a mortal violence.

The jacket was suspended upon the side of a sack filled with hay, that its resistance might have the more exact conformity to the resistance the human body may be supposed to make on the like occasion. I think therefore, no objection can be started against the propriety of this experiment. The balls chiefly went through near the middle of the plates of cork; the jacket therefore had only a fair trial without any favour.

It is also very light, and may be made perfectly easy to the wearer, if properly made and well fitted. To make it the more flexible and pliant to the motions of the body, it may be made of a greater number of pieces of cork than is mentioned. If the jacket be composed of a dozen corks instead of four, provided they weigh as much, it will be as boyant and much more conformable to the wearer.

§. 8. To fishermen, pilots, and many other people who pass the water frequently, and spend much time, at much hazard on the sea, or on rapid rivers, oft in stormy weather, these jackets might also, very frequently, be of extreme benefit.

Pilots, by this provision, confident of the security it gives, would not fear to go out to assist a ship, though struggling in the greatest extremity to make the harbour; hereby many vessels may be saved and brought in by their help, and much property and numbers of lives preserved, that would have perished, had the pilots remitted those terrors a tempest very reasonably excites; being fully satisfied, that whilst they are accommodated with Cork jackets, their lives are not in danger from water. Commerce will hereby receive more benefit than at first sight may appear.

§. 9. Nor are the accidents in distant voyages, happening to ships at sea, by which many unfortunate people perish, only to be consider'd: the numbers of people annually drown'd, by the overturning, splitting, and running down of boats, in the rivers, ports, and on the coasts of this kingdom, make a very affecting computation.

For some years past, not fewer, on an average,

than one hundred and forty souls have been drowned in the River *Thames*. In 1757, the amount for the year past was 173, I have not observed how many the last year produced, but I fancy we may be allowed to suppose, that in the other ferries, ports and rivers of this island, not less than 300 more annually lose their lives by the water.

For the use of boats, upon the River *Thames*, perhaps the jacket might not be quite so convenient as broad pieces of cork fastened together, three pieces on one side, and three on the other, each side about half a pound; these tied to each other, at the distance of twelve inches, by a broad leather strap, with one longer and narrower parallel to it, and fastened also to the left hand side cork; a buckle is joined to the insertion of the broad strap into the opposite cork, to receive the end of the lesser strap; so that it is buckled on in a moment under the wearer's arm-holes; and these sort of floats should, by an order, be appointed to be constantly ready in all boats. If a life be lost for want of them, the boatman to suffer the penalty of five pounds. How easy and trifling an expence this would be, needs not be repeated. Every boat should be provided with as many pair of these floats, always ready in the head of the boat, as they usually carry passengers. If the boatman fails in this, it cannot be thought unreasonable or hard if he forfeits his

fare, for endangering the lives of the people on board, who will thereby all become superintendants of the due execution of so salutary a statute, and be naturally as careful to count their corks, as now to take their numbers. People of a timorous disposition, might preclude the cause of fear by adapting their floats, and being always provided against an accident whilst they were in the boat. All discreet persons, when threatened by danger, would at least have a float in their hands, ready, that if necessity urged, they may swim or float till some assistance can be brought, which is always near in the river, where boats and other vessels, or craft, are so numerous; or if no help should chance to be at hand, the persons thus accommodated, would be carried by the current to some landing place, or within reach of some vessel, even though it were several miles down the stream; so that it would be nearly impossible for any person to be drowned, who had presence of mind enough to lay hold upon the floats. They would be a certain infallible security; and passing and repassing on the *Thames*, would not excite such an idea of terror and dislike as it now does, on account of the many lives that perish in this river. This again, as people become less afraid, may cause more employment to the boatmen, which would increase their number, and help to recruit our navy. Every means to promote that national pur-

pose, should be consulted. That it might probably hurt this seminary of seamen, was a popular argument against the new bridge at *Westminster*. That it would improve it, should have its weight in promoting the use of the proposal here offered.

There may be people who will maliciously misunderstand my meaning, or affect to be merry with it, who, that they may seem to have some reason for their ridicule, may say, Are men who go to sea then, or who take a boat over the river, always to be stiffen'd up in these buckram doublets? But as that is not my purpose, which every sensible person will conceive without further explanation; and as the question can only arise from ill-nature or intellectual impotence, to regard it, would be an instance of extraordinary humiliation.

§. 10. 1. The cork tree grows very well in cold climates.

2. It is produced in many of the *British American* colonies: was it therefore required, it might be made very cheap and plentiful, and extend their commerce.

3. The tree being stript of the cork, soon produces it a-new. It is rather an excrescence from the bark than the bark itself: a sort of agaric or fungus

fungus. The tree does not suffer therefore from its being taken away, as would be the consequence if it was really the bark; but as it is not, the taking it away causes the tree to exfoliate the new production, and the oftener the mother tree is stript, the cork produced again becomes better, more compact, and in larger quantity.

4. Cork is of so warm a nature, that a jacket made of it is not much more inconvenient than a woollen one. Its stiffness and incompliciency are objected with little reason. For though the piece of cork be never so improperly adapted by its natural distortion, to the purpose of a jacket, and no better sort perhaps can be had: Yet, by only making it hot before a fire, it is easily bended, and complies so as to assume any figure or shape, and to be easily fitted to the form of the body, for which it is designed.

§. 11. It is the particular structure and configuration of the human body, rather than its being of a greater specific gravity, that prevents its swimming naturally, as the brute animals do.

Mr. *Thevenot*, some years ago, published a piece in *French*, called *L'art de nager*, or the art of swimming, illustrated with figures. Before him *Everard Digby*, an *Englishman*, and *Nicholas Winman*, a *Dutchman*, had also laid down the rules of this art. *Thevenot* has indeed done
little

little else than transcribe from them; and though he may appear more learned and philosophic in his disquisitions, and more accurate in the manner of transferring his sentiments, yet he contains nothing more really useful or more instructive to swimmers than either of them. Had he read with due attention, *Borelli's* treatise *De motu animalium*, he perhaps would not have affirmed as he has done; that the human species would swim naturally like other animals, were they not prevented by fear, which magnifies their danger. Experience evinces the fallacy of that assertion: for if a brute newly born be thrown into water, it floats; but throw an infant in before it has received any idea of fear, it does not swim, but instantly sinks and is drowned. This is said to be owing to the different structure and configuration of human from other animal bodies: and particularly, which is very extraordinary in the situation of its center of gravity. In man, it is said, the head is much heavier in proportion than any other part of the body. It is also said, this is owing to its being furnished with a larger quantity of brain; and that it has, besides, a deal of flesh and bones, and no cavities filled only with air. But there seems to me to be other, and much stronger reasons to be advanced, to shew why man does not swim naturally. Particularly, because in that action, his face being

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downwards, the nose, mouth and ears being immersed, are obvious to the reception of much water. But, in brutes, the nose is upwards, the mouth horizontal with the water, or above it, and the ears erect. The muscles of their necks being stronger, and placed in an horizontal direction, also tend to elevate the head above the water, and so to prevent its entering at those appertures. And as the heads of brutes are also said to be occupied by many cavities and sinus's, though this indeed be rather a plausible than solid argument, and their brain being but small in quantity, compared with that of mankind. These creatures have therefore many advantages in swimming, which man has not; and consequently are much more able to keep their heads above water, and the respiratory passages freer from suffocation. Breathing being uninterrupted, little action is required of the limbs to keep the body in motion. But as *Borelli* observes, Part I. Chap. 23. that fishes push themselves forward by the force of their tails, and their fins serve only to keep the body well poised and ballanced, and to prevent vacillation: so I doubt not, but the tail of a four-footed animal, is the greatest help to its swimming, which also indicates another reason why brutes swim, and why man does not swim, naturally.

Frogs may be argued against this; it may be said they are without the tail, and yet what swims

swims better? But it is to be observed, that their hind legs answer the same purpose, by conforming to the verticity of the tail in brutes and in fishes, in the manner they naturally employ them in swimming: this motion mankind only can imitate by long practice. The wings of birds correspond in their use to the fins of fishes. The tail is obviously helpful to the flying of birds: take away this important member, they only flutter: deprive a fish of its tail, it cannot swim; and there is great similarity in the manner of motion thro' air and thro' water.

I took a dog, who, with his tail at liberty, could swim very well: I was unwilling to put him to the pain of cutting it off. I therefore tied it so that he could not move it, and so that it could be of no use in swimming. The result was as expected; the dog did not swim with such ease and agility, nor with such activity command himself in the water, as when that member was at liberty, but laboured and plunged, rather fighting with that element, than swimming in it.

§. 12. It behoves this nation, as a maritime power, to promote, extend, encourage, and secure, the naval occupation, by every possible means and contrivance; and, the more that is consulted, the greater benefits may accrue from the art, the greater power to the nation, and the greater honour to its policy, from such interesting measures. Men,
who

PRESERVATION. 61

who were distinguished by their talents for politicks, have observed the vast advantages derived to a state from this, and the necessity there is to encourage every method to cultivate the sea-faring business in all its branches. The effects of which have sooner or later, established under many governments, this maxim, that, **WHOSOEVER HAS DOMINION OVER THE SEA, HAS ALSO DOMINION OVER THE LAND.**



THE

T H E
CONCLUSION.

CONSCIOUS I am, that the haste, with which these papers were written, may have betrayed their author into many inaccuracies of stile and diction, which it is possible, had he allowed himself more time, might have been avoided. There are people who enjoy the discovery of such oversights, with a very exalted triumph. But, disregarding them, I thought those slips of language less criminal, than to delay a benefit to mankind for the redress of such literary trifles; and I persuade myself there are people in the world of the same opinion. 'Tis pity any precipitancy to obey the dictates of universal benevolence, which actuates a publick spirit to quick execution, should meet with no better fate.

The spots and imperfections exposed by a rapidity of virtue, and a fervour of public zeal, may attract the eye of ill nature till it has stared itself blind: but then it will hardly be asked, which party, the object or he
who

who gazed on it, more sensibly irritates ridicule. But to people who read to find faults! give the chaff they have picked for their pains. If such maintain the seat of judgment; merit, or good intention, in vain may plead some title to candour: for they have, perhaps, discovered in his case an illegal *till*, instead of *until*; and a criminal *comma*, to have assumed the authority of a *semi-colon*.

Marks they adjust, and set your comma's right;
And pity 'twere to rob them of their mite.

POPE.

Such typographical critics, if I may use the term, observing the detached limbs only, have no conception of what degree of beauty and symmetry might arise from their natural arrangement and regular union. Much more properly, I believe it will be allowed, had such people been employed in correcting the literary errors of the press, than in criticising upon its productions. Elegant propriety and beautiful disposition of sentiment, to be properly comprehended and judged of, require some degree of capacity, therefore cannot be supposed to fall very fitly under their inspection. For my part, I will venture to take Cicero's word on the subject. *Omne quod de re bona dilucidè dicitur, preclare mihi dici videtur.*

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There are many men, it is true, who draw right conclusions from wrong ideas; but there are more who, from right ideas, draw wrong conclusions. Mr. Locke, to whose word we are apt to subscribe in such matters, gives us no very advantageous opinion of the intellectual rectitude of such people: yet how many such there are, may be best computed by an estimate of those who generally deem every new invention a whim; or, as they call it, a project; never considering that the artist, who endeavours on the foundation of just reason, and repeated experiments, to make his ingenuity a blessing to mankind, is very distinct from, and merits another sort of regard, than that due to the chimerical hypothesist.

But envy, malice, or something still more ridiculous, and much more loud of clamour, take this method to discountenance invention, and extinguish the sparklings of art, by corroding with indiscriminate malignancy, the best and the worst of its productions.

The inventors of useful discoveries, have always found folly hard to be informed, obstinacy to be convinced, and evil-minded prejudice to be silenced; the more they have deserved esteem, the slower have men been to do them justice; they have also had the unpleasing experience, that it was not only their part to design greatly, but they must urge strenuously, persevere steadfastly,

fastly, and, what will be but little to the praise of their generations, they must also bear patiently. The repulses, nay sometimes reproaches too, of the age they lived in, were to be endured : but by that treatment, the age suffered more than the man.

The difficulties and discouragements which, in the nature of things, may oppose a design of public use, are not enough; the inventor must rise superior to them, by the force of intellectual competency and good will to mankind. But greater opponents will advance; human prejudice, evil perversion, and attachment to custom. He resembles the *Syracusan* philosopher, attempting to lift the world with an engine, only there is this difference betwixt their enterprizes; that it is much more difficult to stir the *vis inertia* of human minds, than of matter. Or he may be compared to a little boat with one oar in a tempestuous water, which struggles to pull along, from some dangerous shoal; an unwieldy big vessel, into a more safe and commodious station; whilst the people on board, tho' convinced he is doing them a service, will not even lend a hand to assist : many, on the contrary, are so perverse, they even contrive to impede, by mean artifice, their own progress, only to prevent his; whereas, would but a few jolly seamen take an oar, direct the helm, or unfurl a sail, they might

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proceed

proceed very fast, tho' the current of envy, prejudice, or folly set against them; and the storms raised by evil men, blew strong in direct opposition; but the boat may toil till doomsday, if the crew be lazy: the man indeed meant well, and may therefore be called a fool; but they really are so.

When the great *Roger Bacon* had found out the vertic property of the magnet, though he explained it to the world in an anonymous treatise, it was neglected or discouraged; till an obscure *Neapolitan*, availed of his information, and marking the path pointed out by that great man, introduced the grand invention to practice; made navigation an easier and safer science, and deprived of, or at least divided with the *Englishman*, the honour of that most useful discovery.

There are many indeed, who will acquiesce, that a contrivance *may* be useful, but those, who have spirit enough to exert all their efforts to make it so, are but, I fear, very few. And yet, when a few only are strenuous to push on the machine, as it is already in motion, a little pains will preserve it in action, and even accelerate its rapidity. But popular indolence is not less baneful to improvement, than popular prejudice.

Tho' no argument of any validity can be alleged,

gated, tho' the strongest enforce its utility, tho' it carries conviction along with it, and tho' our very terrors plead for its introduction into practice, on board our ships; yet when I consider what has generally been the fate of many good designs and improvements, I find too much reason to despair ever to see the contrivance here explained, defended, and urged, brought to yield that service it is capable of giving, to people in the greatest distress; unless there are men nobly animated with benevolence, whose virtue prevails over prejudice, who spurn away every invidious malignancy, that may throw stumbling-blocks in the paths of useful designs, and exert their alertest industry and abilities to co-operate in their promotion.

I see very plainly that our own nation, full of prejudice, and actuated too much by the evil bent of habitude, tho' it may be the first to strike out, is too often the last to encourage a useful design. I wish I could not give several striking instances in proof of this unpleasing truth, by which it might also be obliquely manifested how the spirit of improvement animates our national rivals in art and science.

The *French* are zealous to assist new discoveries, alert and active to execute, and charmed to be esteemed the abettors of designs that tend to public utility. It is the next honour to have

promoted, to that of having concerted a good purpose; but a fondness to forward every advance towards maritime perfection, gives them a singularity that I am sorry to see we rather envy than emulate. This it was, doubtless, shewed that nation but very lately so formidable a competitor for naval sovereignty; and if we neglect to catch the evanescent ray that animated them, which will insure our present possession of that power they aimed at, they may soon grow up more vigorous from their present ineffectual fall; and rise to such an height as may convince us, with aking hearts, that the maritime prerogative is not unalienable. I am in no doubt but their alacrity to promote every useful improvement, and especially such as may tend to make a seafaring life more agreeable and less dangerous; consequently the strongest inducements to, and encouragements of it, will excite them with open hands to catch at this here exhibited, and preclude us forever if we now neglect it, the possibility of being the first to encourage and promote, tho' we have been the first to contrive, a thing of such importance to the lives and safety of seafaring people.

Nor will they hereby lose any weight of that noble and laudable boldness that should signalize the seafaring part of mankind, tho' we may suffer much abatement in the ideas given of our dis-

discretion and judgment. There is a wide difference betwixt magnanimity and courage* : there are many men who, though they have but a very little of the former, yet possess a great share of the latter. A temerarious boldness is but ferocity in other terms, and it is criminal with implicit fury to precipitate the human life upon dangers to which it needs not be exposed. To fight with waves, and every peril of tempest and shipwreck, can never be a noble or desirable business ; but when such conduct is regulated by discretion, enforced by necessity, and availed of every security that prudence, art, and other convening circumstances put into our hands ; then, if dangers arise, true magnanimity, and sterling valour have room to exert themselves with propriety. A brave man is only bold when armed, for then alone has genuine fortitude a fair field for exertion. He is a madman who, with a wild effort of desperate intrepidity, meets danger unprovided with the instruments of defence that were in his power ; and it is the want of sense only, that gains for him even the appellation of a *daring man*.

* Some objectors to this proposal have said, that seamen should not be supposed to entertain any idea of fear. But every sensible man knows that, in real danger, it is a degree of madness not to be afraid. Mankind are naturally afraid when surrounded with danger ; to be confident of being in a state of safety ought to remove apprehensions, and not to excite them.

In the horror of despair, ferocity is mistaken for bravery, the wildness of fury for intrepidity, and the efforts excited by danger appear the effect of firmness of mind : if we are then surprized by reflection, we soon confess that weakness was the principle of such heroism, so contempt is oft the companion of it, repentance the fruit, and perdition the recompence. We should have no very exalted opinion, and indeed there would be little reason, of the military competency of a General, who should neglect to possess himself of an advantageous post, at the approach of his enemy, especially if of superior force, and he had no reason for so doing, but because he would not take the advantage before him—Would not he soon be justly accused of a very foolish and criminal temerity, even tho' he gained the victory? And should not we rather incline, in that case, to praise his fortune than his judgment? But that is much different from struggling against elements where all advantages are laudable, and a man cannot refuse them but in opposition to the dictates of nature and common sense.

Now, if a plank starts! if the ship founders at sea, strikes upon a rock, or sand-bank; how oft every soul on board perishes! A lee-shore, with a hard gale, terrifies the seaman, who, animated with the heat of battle, would front the mouth of a cannon.—From what has been urged, it will easily be conceived how safe,
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in all these circumstances, when their ship is in the greatest danger, the lives of the people might be, were they accommodated with the cork jacket. What a comfortable idea to those who go on voyages, thro' the great deep, and when men's hearts fail them for very fear, to be themselves exempted from those anxious apprehensions of perpetual jeopardy, and to feel such disquieting solitudes dissipated and precluded, by confidence of safety; and that tranquillity and content, which, if it does not bring immediate happiness, is certainly a constituent of it; as security is, indeed, much more desirable than the hope thereof.

Had this contrivance been thought of and put in general practice, the rocks of Scilly had abated their terror; Sir Cloudsly Shovell, and the brave seamen lost with him, would many of them doubtless have had a longer date: Balchen, and many of the gallant chosen men who perished with him, might have escaped the jaws of the deep. 'Tis certain, many of those who perished in the *Prince George* so lately, had still been living; and Capt. *Fortunatus Wright*, might now have been a terror to the *French*.

The strongest negative argument that can be employed to enforce a thing, is, that none can be urged against it. When the utility of a proposal is striking, and palpably manifest, to insist long in arguing for it, appears a little burlesque;

and the most solid allegations in support of a self-evident truth, may be so grave as to assume an aspect not over serious. We may therefore conclude, that to the sensible part of mankind, too much already may have been advanced; and I hope to the rest, enough is urged to enforce conviction; and that all who have humanity beyond the shape, will endeavour to bring into general use, the benefit of this contrivance.

Much more might have been urged, to explain and enforce the use of the cork jacket; but the self-evidence of its security and benefit, supercedes the necessity of further demonstration. I shall only add, that no man in his senses, who has a due regard for life, an adequate sense of the dangers of the sea, and a just idea of the security here offered him, will ever venture upon a voyage without availing himself of it, if possible to be procured. Let the seaman, therefore, who has no cork jacket, sell his coat and buy one: tho' it may shew poverty to be pitied, it will demonstrate a prudence to be admired.



THE
SEAMAN'S
PRESERVATION.

CONTAINING
PROPOSITIONS and PRECEPTS

FOR THE
PRESERVATION of HEALTH at SEA.

B O O K II.



Cælestis explorat aquas ———
Avertit morbos, metuenda pericula pellit.

HORAT.

By this, salubrious waters are obtain'd,
Diseases shun'd, impending woes restrain'd.

THE
SHE ROYAL HIGHNESS

BY THE ROYAL WARRANT ONLY

CONTAINING

PROCESSES AND PRECEPTS

OF THE

PRESERVATION OF HEALTH AS ORDERED BY



THE ROYAL WARRANT

IS HEREBY COMMANDED

BY HIS ROYAL HIGHNESS

THE ROYAL HIGHNESS

THE ROYAL HIGHNESS

THE ROYAL HIGHNESS

THE ROYAL HIGHNESS

THE ROYAL HIGHNESS

J. WILKINSON

TO
HIS ROYAL HIGHNESS
The *DUKE* of *TORK*;

A
PATRON OF NAVAL IMPROVEMENTS,

AND A
Rising ORNAMENT of the BRITISH NAVY;

This Second BOOK of
The SEAMAN'S PRESERVATION,

Is dedicated, with all Humility,

By *His ROYAL HIGHNESS's*

Very Obedient,

And Devoted Servant,

J. Wilkinson.

TO
HIS ROYAL HIGHNESS
THE DUKE OF YORK;

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BY HIS ROYAL HIGHNESS

FRANCIS O'BRIEN,

AND DEPUTY SECRETARY,

J. WILKINSON.

PROPOSITIONS

AND

PRECEPTS

FOR THE

Preservation of Health at Sea.

HAVING already explained how by a simple and easy contrivance, light of charge, conveniently carried, artless in construction, and ready of use, the lives of many seafaring people may indubitably be preserved, even when the most terrifying accidents render in vain every effort by which they endeavour to save their vessel: yet as the calamities of sickness are of equal danger to them, I shall proceed to lay down a few concise, practicable, and easy rules, by a regular observance of which the most
of

of those distempers, to which the lives of seamen are generally deemed obnoxious, may be avoided.

(1.) The first disorder incident to people who go to sea, is that called the sea-sickness; 'tis generally reckoned salutary, as it causes a discharge of bilious or acrimonious matter from the stomach. But this disorder is to some constitutions more violent than they can bear: it is easily prevented by taking, before going on board ship, a moderate vomit; and, a little while after it, some gentle opening medicine. The vomit may be from half an ounce to an ounce, of roach alum infused in an earthen pipkin, in a pint of beer, 'till one third of the quantity is evaporated*: a drachm of rhubarb answers the other purpose, to a moderately strong constitution. alum thus taken is not only a good vomit, but also an effectual cure for intermittents when they are too stubborn to submit to the bark. What I speak is from experience.

* This may seem a new sort of vomit, but I am assured of its efficacy and safety too; not only from my own experience, but also from that of a particular friend, whose medical knowledge and judgment can be no more doubted than his humanity and ingenuity. How the alum operates, in intermittents, may be easily explained. But it is more useful to know that it is really specific, than how it acquires that virtue,

(2.) The

PRESERVATION. 75

(2.) The sea-air is the most pure, the most mild, and the most salutary *. Foul air on board ships is extremely detrimental to health. It first arises from the bilge, and the putrid water contained in that cavity. Let therefore the pumps be daily well worked, to extract that water before it can putrify: and often rinse and wash the bilge, by letting in, and pumping out, the clean sea-water. If the ventilator can, by a pipe conveyed thither, be brought to act upon that first origin of putrefaction, the effects of that improvement must, doubtless, be very salutary: but if it only acts in the common way, by extracting the putrid air from the hold and store rooms of a ship, by keeping it, if possible, in constant action, a crew may be preserved in good health, tho' in a hot climate. I do not doubt but an ingenious mechanic might easily construct a ventilator for ships, which their own agitation in the water should keep in almost perpetual movement; so that only in a dead calm, when the vessel was quite

* The sea air is the most wholesome of all others. The learned Ramazini certainly did not do well in attributing the sea scurvy to the saline exhalations which are mixed in that element, especially as he determines it to be a principal cause of that distemper: for in a much stronger degree of heat than is impressed by the sun's influence upon any part of our globe, no salt will rise in distillation of sea water. And again it is well known, that the rays of light and heat are not reflected, but absorbed by the water.

quite still, would there be need of men to work it; and at such times they have little business to do: therefore it would rather be useful in employing them at idle hours, than in any degree laborious.

(3.) Bathing in the sea water, in hot climates, is very wholesome when done with discretion: it should never be immediately after meals, for reasons obvious to those who are acquainted with animal nature and oeconomy. Bathing in, and drinking the salt water is a specific cure for scorbutic diseases. (See p. 6.)

(4.) Cleanliness, and frequent washings, are very beneficial. Sir *John Narborough* preserved the health of his crew, in a long and unwholesome voyage, by obliging them to have a strict observance of cleanliness, and particularly by washing themselves, and being careful to keep neat and sweet their vessels of cookery.

(5.) Cleanliness also extends itself to apparel and bed-cloaths, which should always be, with the strictest care, preserved, in the utmost state of possible purity.

(6.) One instance of detrimental uncleanness, is lying down to sleep, as seamen too frequently do, in all their cloaths: this should never be suffered; but, instead of being prevented, it is oft

PRESERVATION. 77

oft encouraged, that they may be the more ready at a call.

(7.) The strength of man is not indefinite. Seamen are often necessitated to labour extremely hard; even in hot weather, when intense toil is attended with great hazard. This should be considered by all judicious and humane commanders. Let them, therefore, consult every measure of alleviating, or relieving, those dangerous necessities. All the indulgence that can be given them, is the seamen's right upon such occasions.

(8.) But this is attended with another, and even worse effect than that of filthiness, which is the parent of a frowly unwholesome air: for the seamen accustomed to this bad habit, often lye down to sleep in wet jackets, and thereby contract cold, the first introduction to putrid distempers.

(9.) These evil habits are also superinduced by one still much more detrimental, preposterous, and inconsiderate: this is the appointment of watch every four hours, which makes the men desirous to get to sleep as soon as possible after their time of work is expired, their allowance of rest being so short: and if it happens that a man does not suddenly go to sleep, he is called up to watch, his pittance of four hours repose being elapsed,

elapsed, before he sleeps at all: whereas, were the seamen to watch and sleep eight hours, instead of four alternately, their repose would be sound and wholesome, and they would undress and go to their hammocks with comfort and refreshment, nor repine to watch for eight hours after nature had been satisfied with eight hours competent uninterrupted repose. How productive of many diseases, habitude of broken and disappointed sleep, and a privation from due rest, in fact, are, needs not be mentioned. I wish the evil custom, after the example of many other nations, was reformed.

(10.) Much sleep in hot weather is hurtful; it relaxes and enervates very greatly, and disposes the body to many disorders.

(11.) It greatly behoves all seamen who have a due regard to self-preservation, never to sleep upon deck, especially in the night, or when the air is humid: for obvious reasons.

(12.) Let the breast be covered during sleep.

(13.) It were perhaps needless to admonish the prudent seaman never to sleep exposed to the sun, rain, or cold winds. (See §. 19.)

(14.) Every

(14.) Every seaman ought to have three shirts, that he may be able, by keeping them duly washed, to change once in five or six days. After linnen has been washed in salt water, it should be rinsed in fresh water*; for the salt particles adhering to it, are hurtful to the wearer. The expence of fresh water would be but small, an hundred shirts may be rinsed in a small pail of fresh water; but when it rains, even without that charge.

(15.) 'Tis very important to the healthiness of ships, to be well provided with a plentiful store of vinegar†; if the seamen use it with all their victuals, the better; but especially let them use it with pork; and a little in their water too, particularly in hot climates or intemperate weather.

(16.) The less pork is eaten, the better; it ought to be prohibited in hot climates and seasons, or else to be eaten with good plenty of vinegar‡.

(17.) * 'Tis pity a method of making sea water fit for washing is not attempted.

† *Frumenti vero, vini, aceti nec non etiam salis, omni tempore vitanda necessitas.* Vegetius, lib. III. cap. 3.

‡ *Sanctorius* observes, (Sect. ii. observ. 5.) that pork retards perspiration. The hog is remarkable for filthiness, and feeding upon all kinds of ordure, even carrion if it lies in his way: it is the only animal in the brute creation, subject to
ferofulous

(17.) Vinegar corrects evil effects from water inclining to putrifaction, and promotes greatly that salutary perspiration which in hot climates prevents putrid fevers and inflammations. If vinegar fails, spirit of sea-salt answers, in a very small quantity, nearly the same happy purpose, as that in a greater proportion.

(18.) A little salt with food promotes putrifaction; a greater quantity prevents or retards it: therefore in hot climates, it is better to eat none at all than in small proportion.

(19.) Sea water is antiseptic; therefore a preservation from, and very salutary in, scorbutic diseases. It has been observed by those who have treated upon the marine scurvy, that the spirit of sea salt is an absolute remedy*: it restores that stiptic balsam to the blood of which it was deprived by the disease, and for want of which it was discomposed and attenuated to a degree of watery

scrofulous diseases and the leprosy, and also something very like what we call the king's evil, which in *Latin* is termed *scrofula* from *scrofa* a sow: this disease in *Greek* is named *κοιπας* from *κοιπος* a hog: it is also subject to the measles, a noisom disease, and contagious, in so much that it past into a proverb, as we learn from *Juvenal*, who calls it *porrigo*. The putrescent quality of its flesh, and the uncleanness of the beast, shew that its prohibition as food amongst the scrofulous *Jews*, was rather a physical than a divine institution.

* Vid. *Lind* on the Scurvy.

watery fluidity; as is its state in that distemper, we are assured by many accurate observers of the dissections of scorbutic subjects.

(20.) If a little shrub was provided for the use of seamen after hard fatigue, instead of such other liquors as are commonly given to them, by generous and humane commanders, on these occasions, it would have a much better effect, as the vegetable acid in it gives it a superior efficacy against putrifaction.

(21.) The seaman needs no admonition to temperance in drinking, but in warm climates moderate eating is very salutary; inordinate eating solicits diseases; an uneasy fullness is to be avoided. Their being messed in portioned allowances of victuals, is no security against intemperance: for at sometimes a man's health may be in such a state, as to be most suitably nourished with half his usual quantity of food. Intemperance in eating, is much more dangerous than drinking to excess*.

(22.) Avoid in all, but especially in hot climates, the excessive use of spirituous liquors. Palm wine, and toddy, are singularly pernicious,

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* Si qua intemperantia subest tutior est in potione quam in esca. Celsus de med. lib. I. cap. 2.

if not very sparingly drank : but spirituous drinks, diluted with plenty of water, and mixed with any good acid, especially of the vegetable kind, are contributive to promote a salutary perspiration, and to preserve health. Water alone is an improper drink for men who feed plentifully upon animal foods.*

(23.) Seamen, when on shore, should be particularly careful of incurring such distempers as indicate the use of mercury. The scurvy, and other putrid diseases, are always observed to invade, with the most rapid and fatal fury, those constitutions which have previously made free with that mineral, especially if to a degree of salivation†. Hence it is to be observed, that in an advanced stage of this distemper, old ulcerous wounds,

* *Forestus* tells us, on occasion of a pestilential fever which raged in his time : *Quicumque aquam ob ingentem calorem bibissent, ut villicus quidam, ad quem curandum alio morbo affectum, accitus esset, mihi narravit, correpti intra duos dies moriebantur. Qui vero cerviciam bibebant, utpote potum magis huic nostræ regioni consuetum, iis morbus protrahebatur.* Dr. *Rogers* has observed, that “ Such as riot on animal foods, and drink water only, are subject to putrid and “ slow fevers.” See the ingenious and learned Dr. *Pringle's* *Camp diseases*, p. 296.

† *Backstrom*, a Dutch physician, *Hoffman*, *Etmuller*, and *Kramer*, pass an unanimous condemnation upon the use of mercury in the scurvy, and shew much reason for so doing.

wounds, and venereal sores, generally open again, tho' they have been long healed *.

(24.) If the stomach nauseates its common food, is oppressed, and emits much wind, and is sickly, it indicates the immediate necessity of a vomit.

(25.) For a pain in the hinder part of the head, in the breast, back, or loins, if acute, bleeding is indicated: on these occasions, however, be not too lavish of the fluid of life. For a strong man, eight ounces of blood is enough to evacuate at one time. 'Tis much safer, and often more effectual too, to lose twice eight than once sixteen ounces. Loss of much blood superinduces innumerable nervous disorders.

(26.) As pains in the head generally arise from some predisposing cause in the stomach, a little abstinence will, for the most part, prove the easiest remedy. There is scarcely a disease invades the human body, which can resist the mighty restorative virtue of temperance.

(27.) Plethora, or too much nourishment and fullness, is not indeed the most common cause of
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maritime

† That this was the case, we are assured by the author of lord Anson's Voyages, in his description of the scorbutic symptoms.

maritime disorders: however, an illness may happen to be so derived, and then abstinence is an infallible cure, assisted with such a gentle evacuation as may be safely procured by a moderate dose of sea water. (See §. 19.)

(28.) The body should be preserved moderately open: if costiveness continues for more than forty-eight hours, it becomes dangerous; but if it be suffered for three days, some bad consequence may be apprehended: take therefore a sufficient quantity of salt water, to cause the requisite discharge. (See §. 19.)

(29.) A cold is generally the introducer of diseases, and even paves the way, very often, to those of the most terrifying aspect amongst a ship's crew. The scurvy itself generally takes its rise from this origin, therefore a cold cannot be neglected with any degree of discretion. When cold is taken, be as careful as may be, not to increase it by unnecessary exposures: drink plenty of diluting fluids: avoid salt meats, if pease-soup, gruel, or such sort of liquid diet may be procured. Colds are seldom got by seamen, but whilst within ten or twelve leagues of shore. In the proper sea air, or more remote from land, they are very uncommon.

(30.) On

(30.) On such occasions how easily might seamen be supplied with good plenty of excellent and wholesome soup, by the help of a digester in *Papin's* manner? By this machine, with a lamp or candle, the bones of any kind of meat animals might be liquified in a few minutes. How light of charge this engine, how plentifully and readily bones of cattle might be procured, how easily preserved if sliced or in powder, how quickly made potable, how wholesome and restorative such food would be to sickly people, as it is a noble and excellent broth, without the help of salt to preserve, I submit to the consideration of those who have more authority, and with them the same benevolence to compassionate the miseries of seamen in distress.

(31.) Avoid loitering long in the rays of a hot sun.

(32.) Avoid wearing wet cloaths: let them be removed as soon as possible.

(33.) It may seem a trifling matter, but it will prove greatly salutary to a ship's crew, to make every man to wash his mouth daily, morning and night, with vinegar. This is particularly salutiferous in hot weather, and a singular preservative against the scurvy and all putrid diseases. At the same time as such a diffusion of acid or
antiseptic

antiseptic particles are diffused through the parts of a ship, they exert their antiscorbutic efficacy, to prevent, or destroy, the influence of putrescent or corrupt air, and to restore it to a wholesome state: by this practice also, the lungs and more tender vitals, become sheathed or armed against the reception or inhalation of the volatile particles of putrefaction; so that they either are repelled, or else entirely change their poisonous to a harmless quality. The man in such armour is safe.

(34.) When thirsty in hot weather, after fatigue, never drink much water without a few drops of vinegar in it: a good spirit, if procurable, is not improper. The discreet seaman will be provided with a little rum, or arrac, for the same purpose in the same proportion: 'tis better saved for such salutary occasions, than lavished away on shore in riot and intemperance, to the destruction of that health which, thus prudently used, it might contribute to preserve; and to the paving a way for future miseries, which might have been avoided.

(35.) Indolence and inactivity is baneful to health, and portends disease: much sloth is more hurtful than much labour. In calm weather, when there is little business to be done in the ship, moderate exercise should not be neglected.

I have

I have always remarked those who observed this rule, to preserve the best state of health.

(36.) Diseases are derived from every extreme: fatigue and inactivity; fullness and emptiness; sleeping and watching; heat and cold, in extremity: therefore avoid extremes*.

(37.) Salt meats being the principal food of seamen, are generally supposed to be the cause of many of their diseases: if the cause is indispensable, let us endeavour to prevent the bad effects: this may be done by vegetables.

Dried spinnach, coleworts, sorrels, and other antiscorbutic herbs, of which sage is not the least, and 'tis hard to name one without some degree of that quality, might be easily sun dried, and cured for sea use: if made into powder, and boiled in a bag to eat with salt meats, they would be little inferior, either in anticeptic efficacy or agreeable taste, even to fresh garden herbs. This provision would stow in a small compass; and in boiling, a handful of this herb-flower, would dilate to a tolerable mess.

(38.) We are informed, that when Lord Anson's crew landed on the island *Juan Fernandes*, the scurvy had driven them to such a deplorable extremity,

* Vitare oportet fatigationem, cruditatem, frigus, calorem, libidinem. *Celsus*. lib. I. cap. 10.

extremity; that distempered nature had so strong a propensity to the remedy of torments whose violence it had long suffered, that they even lay down to feed eagerly upon the first green herbage they found.

Fine grass hay infused in rain water, makes a liquor which is perhaps one of the most excellent preservatives against, and remedies in, the sea scurvy; 'tis a pleasant drink; hay is easily preserved; it may be made to occupy no great compass of room; there is plenty of hay. Who then is dismayed at the sea scurvy?

I only mention this as an hint, which, tho' it may be found a matter of important benefit to men in distress and sickness, will be ridiculed by others whose sensibility may be best estimated from their compassion.

(39.) The groot is a kind of food much approved by the best sort of people in Germany: it is far from being disagreeable, if properly made; and, as it is an excellent antiscorbutic, would be of great benefit on board ships, especially in long and unhealthy voyages. To the first taste, 'tis true, it is somewhat forbidding; but a little use makes it a very agreeable part of diet. It has a singular virtue to prevent the nauseous rancidity of pork, and other fat meats, that have been long preserved in pickle, and renders them easy of digestion, by supplying the stomach with a more solvent

solvent fluid : therefore it is admirably calculated for the good of seafaring mankind. It is cooling, refreshing, easy of digestion, and moderately aperient : add to this, it is cheap, may be readily prepared, and preserved thro' long voyages, and requires no great space of store-room.

It is made of the white, or any other, cabbages, such as are rejected in the *London* markets, sliced into a clean barrel, a lay of salt to a lay of shred cabbage ; the salt in a larger proportion when it is designed for long keeping. Some people, to make it better than ordinary, and abate the strong smell, strow on each double lay a few anniseeds. It is fit to use in about six weeks.

The benefit, or rather the blessing, this would be on board ships in long voyages, is too great to admit estimation, and too obvious to need it.

(40.) The scurvy generally begins, and is always attended, with an obstructed perspiration ; removing, therefore, that obstruction, is very useful in preventing or curing the distemper.

To rub the skin of the body universally every day with a rough cloth, until it is chafed and glowing all over, opens a free perspiration, and causes the discharge, thro' the pores of the skin, of an invisible matter, which is full of sharp saline particles ; and which, being retained, greatly contributes to increase, if not totally to cause, the scurvy. Tho' this be a very easy expedient,

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yet

yet it is of the first consequence for its salutiferous effects, and therefore ought not to be omitted by those who would preserve good health in long voyages.

(41.) Putrid or stinking corrupt water is extremely dangerous. It should never be drank until it is rendered perfectly sweet, and freed from every perceptible mark of putridity. This will be done very soon by blowing through it large quantities of fresh air; which may be done, as Dr. Hales has shewed, by an easy manner, with a pair of bellows applied to a tin pipe, which is adjoined to a flat tin box with holes in it, which is immersed to the bottom of the vessel which contains the water intended to be ventilated.

(42.) When seamen are in great distress for water, and ready to perish thro' the extremity of thirst, by which many brave men have been lost on board ships; in such a deplorable calamity, they will find great relief by bathing in sea-water; for, tho' it is salt, yet the saline particles, being larger than the diameters of the pores, are not admitted. The body, being indued with a power of absorption, sucks in, thro' the orifices of the skin, so much fresh water, that it is rendered thereby much heavier, and the burning thirst is, by this drinking in of water by the skin, very soon allayed: as we find thirst mitigated

by

by bathing. This is an important discovery to the sea-faring people, who are subject, by various accidents and disappointments, to be exposed to the terrible exigence of water. This I have fully shewn in a treatise now before the Royal Society.

** Effect of
Sea-bathing*

(43.) This method is proposed in the last extremity of want of water; a want which is to be avoided by all possible means, and therefore can only happen by some dreadful accident. Sea water, then mixed with wood ashes and boil'd, yields a vapour or steam, which, being received by a limbeck, and conducted through a pipe into vessels, is a wholesome water for drinking. I would therefore advise for the saving as much water as possible, that the ship's boiler should at all times be covered with a sort of limbeck-head for this purpose; for the loss of the steam is actually the loss of so much good fresh water, which would by this means be all saved; and might, by a pipe, be conducted with the greatest ease to a cask placed in some convenient part of the fore-castle of the ship, to receive the water thus collected. This limbeck may be made of tin or pewter, the broader its top the better; for, by that means, the steam will be condensed in larger quantities, and the larger the quantity which arises from the boiler, the more water will be obtained. Therefore, a spatula or ladle may be so contrived by an ingenious mechanic,

as that, being inserted thro' the side of the cauldron into its cavity, no steam can escape thro' the insertion; and the water or liquor in the boiler may be thereby kept stirring, by a handle at the outward side of it: by this means a very great vapour will be raised in the boiler, which, ascending into the limbeck or still-head, will, as it is condensed, fall into the pipe, and through that be conveyed to the receiving tub or cask; and this vapour, rising in a greater quantity as the ladle is kept in motion, will also descend in a greater proportion, as it is the more quickly condensed, which will be done much faster than without such a contrivance; provided that the nozzle or pipe of a pair of bellows be inserted through the limbeck head into its cavity, and fresh cold wind constantly blown in for that purpose. By this contrivance, simple and easy to be constructed, adopted and managed, a ship's crew may be supplied, at the expence of an handful of fuel, with a perpetual fountain of potable water, in all places and at all times; either when the provisions are boiled in the common way, whereby much water may be saved; or when in want, the men, by thus distilling the sea water, may supply themselves with a very plentiful abundance of that which is good, fresh and salutary for drinking*.

(44.)

* After I had wrote this proposal for obtaining and saving fresh water at sea, the second edition of Dr. Lind's Treatise came

(44.) Dr. Lind says, “to get as many of the
 “men as can be prevailed upon to use the cold
 “bath, either in tubs under the fore-castle, or to
 “dip in the sea, early in the morning, has been
 “found extremely beneficial in warm weather, and
 “in hot countries. The body is thereby cooled
 “and refreshed; the fibres braced up, and invi-
 “gorated, so that the men become afterwards
 “better enabled to undergo the fatigues and heat
 “of the day. This would prove not only an
 “excellent means of health, but of cleanliness:
 “And indeed it has been found experimentally
 “true, that the cold bath is of sovereign use to
 “the *Europeans* in the torrid zone; and that by
 “cleansing the skin, and invigorating the whole
 “habit, it is so far from stopping the plentiful
 “and necessary cuticular discharges in hot wea-
 “ther, that it promotes them. I can affirm,
 “from my own experience in hot climates, that
 “many diarrhoeas, and other complaints, the
 “pure and sole effect of an unusual and great
 “heat, (relaxing the system of the solids, and
 “occasioning a colliquation of the animal juices)
 “have

came to my hand; in which I find he makes a proposal to
 the same intention, by the same method, except only that I
 have advised the frequent stirring of the water in the boiler by
 a ladle or spatula, inserted through the side of it, and a
 quicker condensation of the steam, by means of blowing fresh
 air with a pair of bellows into the limbeck-head.

“ have not only been cured by the bath, but the
 “ return, and even the attack, of such diseases,
 “ effectually prevented by it.

“ I am persuaded that the remarkable health-
 “ fulness of the *Tyger* ship of war, commanded
 “ by captain *Latham*, in her late voyage to the
 “ *East Indies*, was more owing to the use of the
 “ cold bath, than to any other circumstance re-
 “ garding the ship, or her company *. It is in-
 “ deed worthy of observation, that in this voy-
 “ age, two ships kept together in company, and
 “ were pretty much of the same rate; yet, at
 “ the end of the run, one of them had above
 “ two hundred men sick on board, whilst the o-
 “ ther had not above nine or ten. This proves,
 “ I think, to a demonstration, that very minute
 “ circumstances, in a ship, often occasion, or
 “ prevent, a general sickness, and consequently a
 “ great mortality in a voyage.

“ Most people know, that the cold bath, tho’
 “ very serviceable in sultry weather, and at such
 “ a time often absolutely necessary, as I have ex-
 “ periened in my own person in hot countries,
 “ yet may be injudiciously and preposterously
 “ used.

* See a letter from captain *Latham*, inserted in the *Gentle-
 man's Magazine* in the month of *April* 1755. It is dated
 from *St. Augustin's Bay*, in the island of *Madagascar*, 9th of
September, 1754.

“ used. The objections, are their too long du-
 “ ration in the water, or when the sailors are
 “ permitted to go into it over-heated with work
 “ or liquor, when the stomach is full, or a criti-
 “ cal eruption, called the prickly heat, appears
 “ upon the skin.”

(45.) Dr. *Lind*, in his Essay on the most ef-
 fectual means of preserving the health of seamen,
 page. observes, that “ If the *West Indians* could
 “ fall upon a method of making such large quan-
 “ tities at a time of the rob, or inspissated juice
 “ of lemons or limes*, as would reduce them to
 “ a low price, mariners, and all other inhabi-
 “ tants of the torrid zone, might then be sup-
 “ plied with a noble preservative of health, in
 “ sultry unhealthful climates. One of the great-
 “ est physicians † of the *Indies* makes the follow-
 “ ing remark: The most knowing practitioners,
 “ in *India*, place greater confidence in lemons
 “ against the malignant diseases, pestilential fe-
 “ vers, &c. of the country, than in costly bezoar
 “ or theriac. For my own part, says he, I af-
 “ firm, that in my practice there, I found more
 “ benefit from them, than from any one simple
 “ remedy.

“ Syrup

* See Dr. *Lind*'s Treatise on the Scurvy, second edition,
 p. 162.

† Bontius de Medecina Ind.

Syrup of lemons ought always to be put
 in the surgeon's medicine chest, and be occa-
 sionally prepared and renewed in a sufficient
 quantity, at every port, where these fruits are
 cheap, and in season. Orange juice, an excel-
 lent succedaneum for lemons, may be preserv-
 ed, during the course of the longest voyage,
 in the following manner. Care must first be
 taken to squeeze only sound fruit, as a tainted
 orange will endanger the spoiling of the whole;
 the expressed juice must be depurated by stand-
 ing a few days, or filtrated till it is pretty clear;
 then it is to be put into small bottles, none of
 them containing more than a pint of juice; in
 the neck of the bottle, a little of the best oil
 of olive is to be poured, and the cork well sealed
 over.

For want of the aforementioned fruits, or
 their juices, or shrub, I would suggest ano-
 ther vegetable acid for the use of the navy,
 which is the cream of tartar. A dram, or the
 eighth part of an ounce of this, will be suffi-
 cient for each man a day, and for half a pint
 of spirits, mixed up with a pint and a half of
 water. This cream of tartar, is the vegetable
 essential salt of wine, and is an agreeable acid.
 If the officers, and others in the ship, who
 make use of lemons or oranges, would reserve
 their

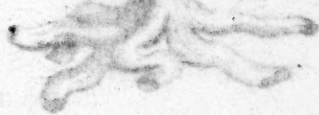
" their peels to be put into the spirits served
 " to the men, it would greatly improve the fla-
 " vour of the punch, and make it little inferior
 " to what is made with lemon-juice. I must add,
 " that this is so innocent an acid, that it may be
 " taken in the quantity of an ounce or two, with-
 " out producing almost any sensible effect, except
 " gently moving the body.

" It has hitherto been the aim of those, who
 " have made marine diseases their study, to find
 " out a proper agreeable acid, which sailors
 " might be induced to use, as the best preserva-
 " tive against many of their diseases, which are
 " mostly of a putrid nature. Vinegar, spirit of
 " salt, elixir of vitriol, and many others, have
 " been severally recommended, and have been
 " experienced, under proper circumstances, to
 " have produced good effects: cream of tartar
 " has the advantage not only of being much more
 " palatable than any of these acids, and, accor-
 " ding to the sentiments of Doctor Boerhaave,
 " and my own experience, beneficial, and well
 " adapted to the constitution of mariners, but
 " is also the cheapest acid that can be recom-
 " mended for the purpose. An allowance of
 " the eighth part of an ounce a day, will not
 " cost the government one shilling yearly, for
 " each man in the *West Indies*. It dissolves in
 " boiling water, and imparts an acidity to cold

" water more than at first would be imagined,
 " considering the large quantity of it left undif-
 " solved. I imagine, however, the best method
 " would be, to boil over-night, in a large kettle
 " of water, about two pounds and a half of the
 " cream, which I think will be sufficient to aci-
 " dulate a hoghead of water: or, as it is now a
 " general practice to mix water with the spirits,
 " before serving them to the men, a due propor-
 " tion of this acid may be issued to each mess,
 " it being certain, that there are but few who
 " would not prefer the use of such an agreeable
 " acid, to water and rum only: And each man
 " having it in his power to exchange part of his
 " salt provisions (which are so detrimental to
 " health in hot countries) with the purser for
 " sugar, may then be daily supplied with a quart
 " of excellent punch; nay, even an increase of
 " the ordinary allowance of punch, provided it
 " is issued out at different times of the day, may
 " safely be indulged, in lieu of the baneful salted
 " meats; the inflammatory quality of the spirit
 " being greatly corrected by mixing it in this
 " manner. Hence, the whole becomes a salutary
 " composition of a cooling, corroborative, anti-
 " putrid, and diuretic nature."

(46) Inspissated juice of turnips would be an
 excellent kind of sauce, or ingredient in soup,
 for sea use, and would cost but a very small sum

to



THE GREAT WATER DOCK.



A. Smith sculp.



"water more than at first would be imagined.
 "considering the large quantity of it left undi-
 "solved. I imagine, however, the best method
 "would be, to boil over night, in a large kettle
 "of water, about two pounds and a half of the
 "cream, which I think will be sufficient to sat-
 "isfy a pint of water, for it is now a
 "general practice to mix with the cream
 "before giving it to the child, and the propor-
 "tion of the two is about one part of each milk
 "to one part of cream. I think that the best way
 "would not be to mix the cream with the milk
 "and each man
 "having a separate part of his
 "own provision, which is convenient to
 "keep in his own kitchen, the proper for
 "usage, may be mixed with a quantity
 "of excellent punch, and an increase of
 "the ordinary allowance of punch, provided it
 "is mixed out at different times of the day, may
 "easily be indulged, in lieu of the hospital table
 "meats; the inflammatory quality of the food
 "being greatly corrected by mixing it in this
 "manner. Hence, the whole becomes a salutary
 "composition of cooling, comforting, and
 "pungent, and digesting nature."



(46) Infused with a little wine would be an
 excellent kind of tonic, of great use in long
 for its use, and would not hurt the small child

THE GREAT WATER DOCK.



A. Smith sculp.

to prepare large quantities of it from so cheap a vegetable as the turnip. This is a good antiscorbutic.

(47.) The water-dock (see plate II.) called *Herba Britannica* *, has been long celebrated as a cure for the scurvy. In the time of *Pliny* †, it was said to be a specific against that disorder, and an army was saved from perishing of that disease by this plant. Providence has given it in great abundance in most parts of this our island; and, if the root were cut into slices, dried carefully in the sun, and put into secure vessels for use, it might be carried round the world, without losing its antiscorbutic corroborating virtue. This, as it is cheap and efficacious too, would doubtless be of great benefit to seamen; it has all the good effects of the bark in a degree, and might be taken in powder or in decoction, and is not dangerous in any way or quantity. This would answer all the purposes of the bark, which is too dear a medicine for common men on board ships to be supplied with.—I therefore propose this as a cheap, and sometimes it will prove a more effectual substitute.

I 2

This

* I have given a plate of this plant, (See p. 100.) that it may be generally known to all seamen; and that they may procure it for themselves when they happen to meet with it.

† Lib. 25. Cap. III.

This herb is a thick, round, spreading, juicy root, spungy when old; about three hands breadth in length, divided below into several pretty thick parts, which are surrounded with fibrous little roots: but, as *Linnaeus* observes, in his *Flora Lapponica*, p. 92. in watery places it grows much larger, with very long, smooth, plain, fair leaves; but in dry situations it grows to a much smaller size, with rough leaves and undulated at the edges — The root is in colour, when newly dug up, black on the outside and white within, but soon alters superficially to a reddish-yellow, like that of the true rhubarb; and the root, when dry, turns quite brown. The leaves are not many, but the longest of all belonging to any of the kinds of docks, situated near to one another, tho' not closely joined but separate, always pointing upwards, of a foot and a half or two feet in length, and three or four inches broad in the middle, which is generally the widest part; they run up to a sharp point, in shape resembling the head of a spear; they are of a deep green or sky colour, inclining to a dark green above, but paler underneath, with pale green fibres, of a pretty thick, hard, dense, close and firm substance: the edges sometimes, especially of those which grow to the stalk, a little curled. They stand on pedicles, which are of a moderate length and thickness, and

and sometimes red near the ground. They have also an astringency, with something of an acidity, and fall off towards the end of *August*. The stalk is single or multiplied, according to the age or bigness of the plant; three, four and frequently five feet in length; strait, round, a little channel'd; of a green and brown colour, hollow, adorned on both sides with lesser leaves, which bend a little upwards as well as downwards, from whose axæ here and there proceed small sprigs, laden with little, short, tender, pendulous leaves, and pale flowers, which open towards the end of *July*, and are thinly disposed about the joints. The three outer petals of the flower are conspicuous on both sides for two hairy, pale-whitish gammulæ, but these are observed in no species of the *lapathum*, but the *Virginian Britannica*; the seed is a small triangular, and of a pale flesh colour.

(48.) Dr. *Lind* proposes, that the royal navy be supplied with a due quantity of bark, as he thinks it might prove effectual for preventing both the bilious fever and the bloody flux, the latter being the same disease, falling upon the intestines.

“ This might be made extremely palatable,
 “ by infusing it in spirits, especially if a little
 “ orange-peel be added. The orange-flavour
 “ renders

"renders it a bitter of an agreeable taste, and
 "conceals what is offensive in the bark. Eight
 "ounces of bark, and four ounces of dried
 "orange-peel, infused in a gallon of spirits, will
 "make a much more agreeable bitter dram,
 "than what the sailors often make up for them-
 "selves at sea, of gentian, snake-root, and other
 "disagreeable aromatic ingredients. — Two
 "ounces of this composition, which will be but
 "a very moderate dram to a sailor, may be al-
 "lowed to each man a day, upon the approach
 "or apprehension of these malignant diseases."
 He says, "It would be better if this quantity
 "were divided into two parts, and one of them
 "taken in the morning on an empty stomach,
 "and the other part when they are called out to
 "their watch."

This author adduces instances to shew how ef-
 ficacious the bark, used this way, has proved as
 a preservative, and then adds,

"It does not appear, to me, necessary to sub-
 "join any cautions * in the use of so excellent
 "and harmless a stomachic bitter, taken in so
 "small

* Where there is apprehensions of sickness, the best pre-
 cepts, are those delivered by *Celsus*, viz. To avoid too great
 fatigue, indigestions, or crudities in the stomach, immode-
 rate cold, as well as great heat, and excesses of every kind?
 more especially, at such a season, the constitution is not to be
 weakened,

" small a quantity as is here directed. A whole
 " ounce of bark has been swallowed, in less than
 " two hours, upon an empty stomach, by per-
 " sons in health, without their being able to per-
 " ceive from it the least sensible, much less any
 " bad effect †. Its long continued use, is ob-
 " served neither to offend the weakest hysteric
 " female constitution, nor to ruffle the most
 " sensible and feeble system of nerves and solids
 " in men.

(49.) " The particular unhealthy seasons of the
 " year, the harbours and coasts most fatal to
 " *Europeans*, are now generally known. Such
 " places, prudence directs to be avoided; but
 " this expedient for health, cannot always be
 " complied with. Necessity often obliges ships,
 " to put into parts, where sickness may be justly
 " apprehended; in order to guard against which,
 " as much as the situation of things will permit,
 " they ought to be furnished with some other ne-
 " cessary directions.

" It

weakened, by bleeding, and purging, for the sake of preven-
 tion. If at this time the stomach, or intestines, are oppressed
 with crudities, or sharp bilious humours, these may be gently
 carried off by a draught of salt-water, or by a mild laxative
 of rhubarb, shunning all great evacuations of the body as
 hurtful.

† Vid. Dissert. Medic. de *Cortice Peruviano*, p. 14. Auctore
 Cheney Hart.

“ It may, in general, be remarked, that, in
“ sultry climates, or during hot weather, in all
“ places subject to great rains, where the country
“ is not cleared and cultivated, but is over-run
“ with thickets, shrubs, or woods, especially if
“ there are marshes, lagunes, or stagnating wa-
“ ters in the neighbourhood, sickness may be
“ dreaded, and such a malignant fever of the re-
“ mitting, or intermitting kind, as has been of-
“ ten mentioned *. The fens, even in different
“ counties of *England*, are known to be very
“ dangerous to the health of those who live near
“ them, and still more so, to strangers; but the
“ woody and marshy lands, in hot countries, are
“ exceedingly more pernicious to the health of
“ *Europeans*.

“ When ships are necessarily obliged to put
“ into such unhealthy parts, the first precaution
“ to be taken, is, to anchor at as great a dis-
“ tance from the shore as can well be done.—
“ To prefer the open sea, where the anchorage
“ is safe, to running up into rivers or bays in-
“ closed with the land, and especially where
“ there are high mountains, that may intercept
“ the salutary current of sea breezes. The
“ higher Ships sail up the rivers upon the coast
“ of *Guinea*, the more sickly they become.
“ Such, however, as keep at sea, beyond the
“ reach

* See his Treatise.

“ reach of the land breeze *, are, for the most
 “ part, pretty healthy.”

(50.) “ When a ship puts into a harbour,
 “ where sickness may be apprehended, from a
 “ low, marshy, uncultivated country ; she should
 “ be berthed in the most airy station, where
 “ she may be well exposed to the sea breezes,
 “ and, as much as possible, to the windward
 “ of the woods and marshes : And the same
 “ precautions are to be taken, when arriving at
 “ the sickly season in those climates ; that is, ei-
 “ ther during, or soon after, a rainy constitution
 “ of the atmosphere.”

“ The success of expeditions in the *East* or
 “ *West Indies*, greatly depends upon their being
 “ executed in the most proper season of the year ;
 “ as also upon a selected harbour, with a situa-
 “ tion for the ships open to the wind, as one of
 “ the best preservatives against the maladies of a
 “ neighbouring sickly country ; it having been
 “ often experienced, in those dangerous climates,
 “ that riding safe from the wind, in secure creeks,
 “ and stifling close havens, surrounded with in-
 “ terposing mountains, has proved the destruction
 “ of fleets, at an anchor, while their cruisers at
 “ sea, have enjoyed perfect health.”

“ If,

* Two or three leagues at sea.

“ If, in such climates, it should happen, that
 “ there is no possibility of avoiding to anchor
 “ close to the land, and even in a harbour, where
 “ the ship is quite encompassed with woods,
 “ mountains, and swampy ground, to alleviate,
 “ as much as possible, this misfortune, some o-
 “ ther precautions may be taken.

“ The first, that I shall mention, is——That
 “ the crew be kept at work upon deck, as little
 “ as the nature of the service will permit, before
 “ sun-rising, or after sun-setting. This advice
 “ is founded upon an observation, that when the
 “ sun is above the horizon, the noxious land-va-
 “ pours are more dispersed; they are then much
 “ rarer, than in the night, or even in the even-
 “ ings and mornings, when they become denser,
 “ and more apt to affect. Add to this, that the
 “ land-wind vigorously conveys them in a more
 “ abundant quantity towards the ship. Now,
 “ the night-air at land, in those southern cli-
 “ mates, is always very moist, occasioned by the
 “ excessive dews; and these dews are experienced
 “ to be extremely pernicious to such persons, as
 “ are exposed to them. But, altho’ we may sup-
 “ pose the falling dews to be impregnated with
 “ unfavourable exhalations, from the earth or
 “ land-air, it is nevertheless certain, that extreme
 “ moisture;

“moisture, greatly favours the exertion of their
“unfriendly influences.

“When a ship at anchor is near marshy ground
“or swamps, especially during summer or in
“hot weather, and the wind blows directly from
“thence, the gun ports, which would admit such
“a noxious land-breeze, ought to be kept shut.
“Or if the ship rides with her head to the wind,
“a thick sail ought to be put upon the fore-
“mast, along which, the smoke from the galley
“might be made constantly to play and ascend.
“If the sail should occasion a little salutary smoke
“between decks, this inconvenience will be suf-
“ficiently compensated, by its keeping off the
“full and streight stream of the swampy shore-
“effluvia, which now being obliged to form a
“curve, before they reach the after part of the
“vessel, must needs be greatly diverted and scat-
“tered. At such seasons, the men may be en-
“joined to smoke tobacco, and the carpenters to
“fumigate the ship often with the wholesome
“steams of pitch or tar.

“’Tis constantly experienced, that the greatest
“sufferers in unhealthy harbours are the boats
“crews, and such, as being employed in the
“necessary business of wooding and watering the
“ship, are obliged to sleep on shore. That the
“men, on these duties, are so suddenly and uni-

“versally seized with sickness, is commonly ascribed to their intemperance, or their being wet in the night, with rain, from the insufficiency of their tents, &c. But the Truth is, their nearer approach to the unwholesome land-air, and especially their sleeping in it, are the real causes of their being infected. This is demonstrable from the nature of the malady, which they contract, which is very different from the effects of drunkenness, or of a common cold, and is constantly the peculiar endemic disease of the country. One great means then of the safety of the men, which are employed on shore, would be to relieve them often, and to permit none to sleep in the tents. Centinels should be placed with a midshipman at the watering place, and strictly charged to prohibit sleep; for in sleep, (a state of general relaxation) there is the greatest danger from the unwholesome air.

“As for those who must of necessity remain on shore, and sleep in indisposing deserts, and uninhabited places, some farther directions should be added for their use.—They must take care not to sleep upon the ground exposed to the dews, but in hammocks in a close tent, standing upon a dry sand, gravel, or chalk near the sea-shore, and where there is no subterraneous water for at least four feet below the surface

“ surface of the ground. The door of this tent
 “ should be made to open towards the sea, and
 “ the back part of it, which receives the land-
 “ breeze, must be well secured by double canvas,
 “ or covered with branches of trees. When the
 “ air is thick, moist and chill, the earth being
 “ overspread with cold dew, a constant fire must
 “ be kept near the tent, as the most excellent
 “ means of purifying such unwholesome air, and
 “ of preserving the health of those, who, either
 “ sleeping or waking, are exposed to its influ-
 “ ence. The sentinels who guard the water-
 “ casks, ought likewise at such a time to have a
 “ fire burning near them. All old and forsaken
 “ habitations, convenient caves, and natural
 “ grottos in the earth, where the men may be
 “ induced to take up their abode, must, before
 “ their admission, be perfectly dried and purified
 “ with liberal fires; likewise every person should
 “ be made to observe the necessary document of
 “ warmer clothes and coverings, as a defence
 “ from the chilling nocturnal air.

“ Let all who value their health, also have
 “ recourse, upon these occasions, evening and
 “ morning, to a dram of the bitter infusion of
 “ bark: or, if this cannot be procured, they
 “ may use a moderate dram of garlic-brandy.
 “ Expositions to the too great heat of the sun,
 “ are carefully to be avoided.

“ Those

“ Those seamen or officers, who are employed
“ on shore, may be allowed to indulge themselves
“ in a more plentiful, tho’ moderate use of vi-
“ nous or spirituous liquors. In ague-producing,
“ hot, and intemperate climates, a light dinner,
“ but a more hearty supper, with a glass in the
“ evening, will not be amiss, for such as have
“ been accustomed to free living.”

The late worthy Dr. *Hales* has given a remark,
which may be here properly inserted.

“ I have been informed by a person who re-
“ sided many years at *Gamron*, or *Gambroon*, on
“ the island of *Ormus*, in the *Persian Gulph*, that
“ they often lie on carpets on the open balconies,
“ or turrets at the tops of their houses, and that
“ without any danger to their health, provided
“ the dew was salt to the taste; but if it was not
“ salt, that it was very noxious, as in other hot
“ countries. As to the saltness of the dew in
“ that place, it is owing to the natron, which is
“ in plenty on the surface of the earth in that
“ country, in *Egypt*, and thereabouts; and
“ which the ancients used plentifully in their
“ baths, and which they probably found very
“ salutary to them. This natron is an acrid lix-
“ ivial salt, which the ancients used for cleansing
“ cloaths, and making glass.

“ As

P R E S E R V A T I O N. III

“ As it is well known that persons who bathe
 “ in the sea, and then put their cloaths on their
 “ wet bodies, are yet not subject to catch cold;
 “ and as the same is also observed of men and
 “ women, who walk along more than knee-deep
 “ in the sea to catch shrimps and prawns, or for
 “ diversion, as many do, and yet catch no colds,
 “ even though they keep on their wet shoes and
 “ stockings till night; and as seamen are observ-
 “ ed to be very hardy, so as seldom to catch
 “ cold; these considerations led me to think,
 “ that it might probably be a good method for
 “ people to wet their bodies with salt water, and
 “ then put on their cloaths, some time before the
 “ noxious fresh dews fall in the evening in hot
 “ climates, especially when they were to be ex-
 “ posed to those dews. And in cases where
 “ people are obliged to travel, and be out in
 “ them, they might carry with them some salt,
 “ or salt water when they were not likely to meet
 “ with water to put salt into. It is probable that
 “ any common salt may do; but if the propor-
 “ tion of five ounces and an half of bay salt is
 “ mixed in a gallon of water, it will very nearly
 “ approach to the degree of saltness and quality
 “ of common sea water.

“ On my communicating this to *Peter Wyche,*
 “ Esq; in *Great Ormond-street*, he wrote me word,
 “ that

"that observing the above-mentioned good ef-
 "fects of sea water when he was at *Brightbehm-*
 "*stern*, he was led to think it might be of benefit
 "to soldiers, (who are often obliged to lie whole
 "nights in an open, inclement, moist air) to
 "have sacking made so as to cover their faces
 "and bodies all over; the sacking to be well
 "soaked in salt water. And it would probably
 "be very beneficial to them to wet their bodies,
 "as above proposed, when they lie in damp
 "tents, especially if such proper means are used
 "to carry off the foul air near the ridge of their
 "tents, as are described in my book of ventila-
 "tors, page 71. For the more and longer foul
 "damp air is confined, so much the more un-
 "wholesome it will be."

(51.) Moist cloaths and bedding are frequently a prevailing cause of sickness on board ships.

What still adds greatly to the production of disorders a ship-board, and ought to be duly regarded, is the preposterous custom of washing the decks after sun-set. For, in whatever part of the world or season this method is practised, it cannot fail to be greatly detrimental to the health of the crew. The decks, and all parts of the hull of a ship, certainly ought to be washed and scraped as clean as possible, and perfused with fresh air as much as may be, and as often as practicable. But then this should always be done
 when

when the water employed in cleaning may be soon dried up, otherways the very vapour of it becomes a new cause of mischief, almost equal to those parents of pestilence, filth and foul air. It is every man's particular business and interest to take great care that his chest, cloaths and bedding be often aired, and kept as free as possible from damp, mouldiness, rottenness and dirt. Those who are remiss in these articles, ought to be obliged to become more cleanly.

(52.) In hot climates and weather, all flesh-meats, but especially pork, should be eaten very sparingly. Fatal experience shews that by devouring large quantities of those meats, and using the same heavy obdurate foods in the *West-Indies* or upon the coast of *Africa*, and in other warm places, many thousand *English* seamen have been destroyed. Almost all diseases in hot climates are of a putrid nature; so flesh, which has a putrid tendency, cannot fail in some measure of contributing to their production.

The author above-mentioned observes, that
 “there are not wanting instances of the good
 “effects of putting the ship's company, in long
 “voyages, upon a very short allowance of salt
 “meats.” The following is too much to the purpose to be omitted, as it seems to demonstrate

L

the

the utility of the measure, by a comparative trial, at different times, of its effects.

“ In the last war, the men belonging to the
 “ *Sbeernefs*, bound to the *East Indies*, apprehen-
 “ sive of sickness in so long a voyage, petitioned
 “ the captain not to oblige them to take up their
 “ salt provisions, but rather to permit them to
 “ live upon the other species of their allowance.
 “ Captain *Palliser* ordered, that they should be
 “ served with salt meat only once a week, viz.
 “ beef one week, and pork the other. The con-
 “ sequence was, that after a passage of five
 “ months and one day, the *Sbeernefs* arrived at
 “ the *Cape of Good Hope*, without having so much
 “ as one man sick on board. As the use of *Sut-*
 “ *ton's* pipes had been then newly introduced
 “ into the king's ships, the captain was willing
 “ to ascribe part of such an uncommon and re-
 “ markable healthfulness, in so long a run, to
 “ their beneficial effects : but it was soon disco-
 “ vered, that, by the neglect of the carpenter,
 “ the cock of the pipes had been all this while
 “ kept shut. This ship remained in *India* some
 “ months, where none of the men, excepting
 “ the boats crews, had the benefit of going on
 “ shore ; notwithstanding which, the crew con-
 “ tinued to enjoy the most perfect state of health.
 “ They were, indeed, well supplied there with
 “ fresh meat.

“ On

“ On leaving that country, knowing they
 “ were to stop at the *Cape of Good Hope*, and
 “ trusting to a quick passage, and to the abun-
 “ dance of refreshments to be had there, they
 “ eat their full allowance of salt meats, during
 “ a passage of only ten weeks; and it is to be
 “ remarked, the air-pipes were now open. The
 “ effect of this was, that when they arrived at
 “ the *Cape*, twenty of them were afflicted, in
 “ a most miserable condition, with scorbutic
 “ and other disorders. These, however, were
 “ speedily recovered on shore, by the land re-
 “ freshments.

“ Being now thoroughly sensible of the bene-
 “ ficial effects of eating, in those southern cli-
 “ mates, as little salt meat as possible, when at
 “ sea, they unanimously agreed, in their voyage
 “ home from the *Cape*, to refrain from their too
 “ plentiful allowance of salted flesh. And thus
 “ the *Sheerness* arrived at *Spithead*, with her full
 “ complement of 160 men in perfect health, and
 “ with unbroken constitutions; having, in this
 “ voyage of fourteen months and fifteen days,
 “ buried but one man, who died in a salivation
 “ for the pox.”

(53.) The beer that is brewed for the use of ships would be much more contributive to the preservation of the health of seamen, if it were to be bittered with wormwood, camomile-flowers, or even gentian, than it is when bittered with the hop. It should also be very plentifully impregnated with those ingredients, for they are possessed of many good qualities which are not ascertained to the hop; and they have, besides, thus liberally employed, the further desirable effect of causing the beer to keep longer without acquiring any bad property. And, tho' these ingredients may seem at first unpromising, yet they will be found, by experience, to give as agreeable a taste to beer, as it derives from the hop.

(54.) Dr. Lind, in the above 45th §, proposes to have ships provided with quantities of the juices of lemons, limes and oranges; which, doubtless, will be extremely contributive to the preservation of the health of seamen when such juices can be procured. But the opportunities of obtaining these articles, in plenty enough to be of general benefit on ship-board, so rarely happen, that I fear this proposal will be very seldom practised. These fruits are only the produce of particular foreign countries; therefore only to be had by accident, or bought at a great price. —

What

What seems to be principally wanted for the use of ships, is some kind of salutary antiseptic produce of our own country, such as may be generally had without much charge or labour, and can be easily preserved for a great while at sea, and is therefore suitable for those ships which go long voyages, as, to the *East-Indies*, or unhealthy ones, as is the case particularly with the *African* ships, which are concerned in the slave-trade. These could not possibly, when they are fitted out from hence, be supplied with the above-mentioned juices; yet, when opportunities of conveniently getting such things do happen, they certainly should not be neglected.—We ought, therefore, to endeavour to find out such articles as our own country produces so plentifully, as to make them easily and generally to be obtained; and so spontaneously, that they are of small charge, tho' of great value if possessed of such wholesome and antiseptic properties as may prevent the dreadful visitation of fluxes or fevers, and some other disorders proceeding from that putrid tendency in the body, which commonly happens in those voyages.—Nothing can be more plentiful than these very articles we want for this purpose.—They are yielded spontaneously by all the woods and hedges throughout our island; and they have been found, by sufficient experience, to answer the good intention in several instances too strong to be contested.

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The water-dock has already been fully mentioned as a cheap and effectual preservative against the scurvy. Bullace, sloes, wild plumbs, hips, elder-berries or crabs, either preserved with coarse sugar by being boil'd in it, or else brought to a rob or extract, by boiling their expressed juices to the consistence of honey, may be kept thro' the longest voyages; and are not only agreeable enough to the palate, but are inexpressibly salutary and beneficial for preventing marine distempers in crowded ships, unwholesome climates and long voyages. These fruits are so abundant, that a large ship may have a good supply for a very inconsiderable expence; and, I am sure, the owners of ships would be gainers by allowing these necessaries on board their vessels, particularly if employed in the *Guinea-trade*, in which they lose so many people by yellow fevers and fluxes, which are prevented by nothing so happily and effectually as by the noble antiseptical astringency of bullace and sloes, preserved or in extract. Apples and pears, or other fruits, may also be easily preserved and beneficially used in the same manner; or they may be cut into slices and put upon strings in dry weather, by which they will be dried without losing their flavour or taste, so as to afford not only a grateful refreshment, but a valuable antiscorbutic to seamen; they ought to be carefully stored in very dry boxes,

boxes, and aired sometimes to prevent their being moulded or damaged.

(55.) The bark proves a specific for the malignant, remitting or intermitting fever; and the continued use of that remedy effectually prevents a relapse. It is, therefore, natural to infer, that the use of the bark would be a certain and effectual preservative from the attack of that distemper. This inference is justified by the experience of those who have made use of this medicine in those unsalutary places, where this fever and other malignant disorders were, from a corrupt and putrid disposition of the air, and other disagreeable circumstances, very much to be apprehended.

Dr. Lind, who mentions the Peruvian bark as having been found by experience to be very useful in the sea scurvy, thinks it would likewise, doubtless, prove equally beneficial in preventing that disease. But this being a very expensive drug in *England*, it cannot, therefore, be supposed that ships will be furnished with it in such plenty as to be of common benefit to the whole crew. But tho' this be the case, unhappy as it may appear for the poor seamen, yet they may be supplied, at the cheapest rate, with a medicine of nearly equal goodness and efficacy from our own soil; and, if prudently employed, the scurvy, that

that maritime pestilence, will seldom or ever make its alarming appearance among a ship's crew on long and unhealthy voyages, proper care with regard to cleanliness and provisions being observed. The subject I will here boldly venture to recommend to their use, is the fine bark of the *English* oak *, which is easily cured for preservation, and may be conveniently taken by a dram at a time, occasionally, in powder, or, in proper quantities, reduced to extract, or in decoction.

(56.) If a man at sea finds a pain and giddiness of the head, a heaviness and dulness of the eyes, a sense of fulness and weight in the breast, the pulse being quick, laborious and oppressed, a fever is to be apprehended. In such cases bleeding is indicated; eight or ten ounces of blood may be taken away, and bleeding repeated occasionally.

(57.) When the stomach is oppressed with indigestion, causing a constant sense of fullness, and is disordered with crudities or windy belchings; fat or greasy foods should be avoided: and, in this case, refraining from a meal is often a more immediate remedy than can be procured from medicine. Many disorders begin by indigestion, and that source of sickness is relieved by abstinence.

(58.)

* I have frequently used this with success in intermittents.

(58.) Particular cautions are necessary to be observed for preventing the generation or introduction of sickness on ship-board, of which I shall here subjoin a summary in as few words as possible.

Disorders are often introduced on ship-board by uncleanly seamen; those who are sickly, or just returned from an unhealthy voyage, or picked up in the streets, or who may be suspected of the goal distemper. No men or cloaths brought from prisons, or from on board sickly ships, should be admitted.

Men seasoned to particular climates are the fittest to be employed on board ships destined to those parts, and should accordingly be always selected.

Those, who are just returned from long voyages, ought not to be immediately taken on board other ships just going to sea, but should always be allowed a certain time on shore, where they may, by being supplied with plenty of vegetables, regain a salutary disposition, and recruit their constitutions.

A fresh new built ship is apt to disorder the seamen, unless the timber and paint, &c. be

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thoroughly dried, and all vapours carried away by proper ventilation or perfusion of fresh air, which should always be carefully done before the men are put on board.

The first diseases most commonly happen in a voyage to hot southern climates, and therefore the greater caution is necessary to be regarded on board ships which are upon such destination. Young seamen should be put upon the more salutary voyages the first, and properly seasoned before they are employed in those to more unhealthy places.

Bread, peas, rice, flower or oatmeal, and other farinaceous matters, ought to be carefully and daily ventilated to preserve them from vermin, mouldiness and corruption; in which conditions they are the certain seeds of putrid diseases, and ought not, if any thing else can be had, to be used for food. Water that is maggoty or putrid has the same poisonous qualities, which should either be prevented or avoided with the same industrious precaution. In short, all sorts of provisions, when in a decayed state, or when worms appear in them, are noxious to a degree that cannot be expressed. And, tho' salt meat must be eat at sea, yet that which is maggoty, or tending to decay, should never be eat but in the last extremity of
famine;

famine; and even then, if vinegar can be had, it should be eat with it in very great plenty.

When sickness begins on board a ship, the sick should immediately be removed as much as may conveniently be from the well. Their birth should be as airy as possible, without exposing them to take cold; and the ship should every day be fumigated with burnt rosin, odoriferous wood or herbs, tar, sulphur (used carefully) or gunpowder. To boil vinegar in the hold and lowest parts of a ship, fills the whole cavity of the hull with a vapour that is salutary and antiseptic to a very great degree; and this may perhaps be the best way of using vinegar, to prevent a corruption of the air, or the spreading of diseases. Fumes of tobacco may be employed to the same purpose with good success. The cloaths and station of the sick ought to be particularly fumigated; their foul cloaths should always be instantly sprinkled with vinegar, or tied to a rope and plunged in the sea water, to wash from them all seeds of contagion: vinegar should also be dispersed plentifully every where through the vessel, and cloaths dip in it, hung up in all parts, and fresh vinegar frequently sprinkled upon them to keep the vapour of it continually afloat, but especially the sick station ought to be daily well washed with vinegar.

(59.) It is well known that a voyage to the western coast of *Africa*, and from thence thro' a hot climate to the *West Indies*, is a very unwholesome voyage. Some merchants, therefore, fitting out a ship for the *Guinea trade**, gave express orders to a very prudent commander of their vessel, to observe, with great exactness, the rules and instructions here recommended, for the preservation of health on board ships; which he accordingly put in practise to the utmost of his power.—What added to the danger of sickness in this case was, that the vessel was very small, stowed as full as possible with slaves, and had no ventilator to expel the putrid steam of foul spent air, and other unwholesome vapours; yet, it gives me now a particular pleasure to inform the public, that, in all these unpromising circumstances, the voyage, which might be reckoned a kind of experiment of the utility of these regulations and methods here proposed, (as far as they could be complied with) was as successful as the most sanguine expectations could have promised.—The whole ship's crew returned safe and well to their port in *England*; having delivered a cargo of an uncommon number of slaves, for so small a vessel to contain, without losing even one soul thro' all the voyage, which is an instance of such a singular and very extraordinary nature,

* In the Year 1761.

nature, as it may be presumed will excite some admiration in those who are acquainted with the unwholsomeness and danger of this voyage, and ought to gain the due attention of those who are concerned in this trade—if they have any humanity.

I could aduce several other instances which have since happened of the like happy effect, arising from a due regard to these cautions.

It may here be observed, that the captain of the vessel had not the groat (see No. 39.) on board; but, instead of it, he was supplied with a very considerable quantity of pickles of different kinds, preserved sloes, bullace, damsons, to which several other acid fruits and extracts were added, properly preserved in glass bottles or stone jars, for earthen ones glazed are very dangerous either for preserves or pickles.

We might have recommended also, could it have been procured, the rob of oranges, which Dr. Lind prefers, perhaps not unjustly, to all other remedies in the scurvy. However, that seamen may not omit any opportunity of providing it when they can, this is the method of making it.

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The pure juice of lemons and oranges, when they are plenty, may be put in a glass or earthen basin that is not glazed, and placed in a pan or caldron of water, suffered to boil until the juice becomes a consistent extract by evaporation.—

The juice of two dozen good oranges, weighing five pounds four ounces, will yield one pound nine ounces and an half of purified juice; and, when evaporated, there will remain about five ounces of the rob or extract. Thus the virtues of twelve dozen of oranges may be put into one quart bottle, and preserved for several years.

Also spruce beer, which may be brewed fresh every two or three days, is an admirable drink on ship-board, and to be made by pouring boiling water on the tops of the cones, bark or wood, of the spruce or any other fir, dried or green; or even a little turpentine and wormwood may be substituted where these cannot be had, and then fermented by a super-addition of a proper quantity of molasses.

A drink may also be brewed in the same manner from the saffrafras chips, its dried leaves, or from the branches or berries of the juniper plant.

(60.) But bad provisions, foul air, unclean ships, putrid water, cold or heat, watching or disappointed rest, fatigue, change of climate, or
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the extremest vicissitudes of all those detrimental varieties, do not so fatally injure the foundations of health, and so rapidly hasten its ruin, as every sort of inordinate indulgence in riot and debauch—Excess is the poison of health; and no medicine, for its virtues, can be compared with temperance.

C O N C L U S I O N.

THE propositions here advanced, for preserving or restoring health at sea, have been the more numerous, because seamen may happen to have an opportunity to avail themselves of one of the articles, &c. herein mentioned, when another cannot be so easily obtained, or so conveniently employed.—They have, therefore, a more extensive field laid open to their use and benefit.

Minute medical disquisitions have herein been carefully avoided, as it is more important to the seaman to learn by what means health may be preserved, or distempers remedied; than to be informed upon what particular physical principles the happy fate is accomplished.

Nothing has been said, in these papers, with respect to particular constitutions: seamen are supposed to be robust, as their employment is laborious. And for such, in general, these precepts,

cepts, for the preservation of health at sea, are directed. Others, who may make an accidental voyage, should take proper advice according to their constitutions, lest they suffer from a mode of living, situation and element, to which they have not been accustomed.

A healthy man, under his own government, may perhaps despise rules, and live indiscriminately, upon all sorts of food. He may consult his inclination, rather than his constitution; attend feasts, or abstain, as he likes best; sometimes he may indulge, and sometimes even dare to commit excesses*.

But the seaman is not under his own government, and at large, on shipboard; and therefore should conform, when he can, to the precepts of discretion and experience, that his health may be happy, and his days many.

And now, let me intreat all prudent commanders of ships to honour themselves, and shew mercy to their seamen, by strenuously promoting a due observance of these admonitions, which are founded in truth and experience.—So may Providence always shew mercy to them for their wisdom and benevolence, crown all their good intentions with prosperity, and conduct them safely through those perturbations common in the voyage of human life, to the commencement of an eternal felicity.

A P.

* *Celsus*, cap. I. reg. 1.

A P P E N D I X.

SEAMEN are not only subject to the manifold calamities of ship-wreck and sickness, but in certain places, and at particular seasons, ships are also very liable to receive great damage, and, sometimes, to be destroyed by lightning; of which too many instances might be produced for any to be necessary.—I cannot, therefore, neglect this article, as it is my intention not to omit any thing which may importantly tend to preserve the lives of seamen. I must beg then to put them here in mind of their great benefactor Dr. *Franklin*, who has discovered a method to protect ships from the lightening, which is here annexed, as delivered by Dr. *Watson**, in the following Words.

“ We are to guard against the thunder-clouds,
 “ which are near us. The mast of every ship
 “ which is beset on its tops with those bright
 “ lights which our mariners call comazants, and
 “ are the *feu St. Elme* of the *French*, and were
 “ the *Castor* and *Pollux* of the ancients, is within
 “ the sphere of action of a thunder-cloud. An-
 “ ciently, when they were seen, they were only
 N “ confi-

* See Phil. Transact. Vol. LII. p. II. p. 632.

" considered as the attendants of a storm, and no
 " consequence was drawn from them; but now
 " (since Dr. *Franklin's* admirable discovery of
 " conducting lightening from the clouds, we
 " know them to be no other than a modification
 " of the same meteor which constitutes thunder
 " and lightening) they demonstrate that danger
 " is near, and therefore we should do our ut-
 " most to prevent its effects. This, in my opi-
 " nion, would be done, if a wire of iron or any
 " other metal were connected with the spindles
 " and iron-work at the tops of masts of ships,
 " and conducted down the sides of the masts,
 " and from thence in any convenient direc-
 " tion so disposed as always to touch the wa-
 " ter. By these means the accumulation of
 " the matter of thunder and lightening will be
 " prevented to a considerable distance from the
 " ship, by its being discharged silently by the
 " wire, which will not be done by the masts;
 " as these, from their height, figure, and con-
 " stituent parts, without an apparatus of this
 " kind, tend to direct and conduct the lightening
 " into the ships."

" The applying wire to the masts of ships
 " will be neither difficult nor expensive, as a
 " brass wire of the thickness of a large goose-
 " quill,

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“quill, I am of opinion will in most cases
“be large enough to answer this purpose. I
“prefer brads wire to iron, as the former is
“less liable to rust than the latter; and any
“metal corroded to the center ceases to be of
“any use in directing the lightening in the de-
“gree hoped for, and expected by this appa-
“ratus.”

When a man has been struck by lightening,
the most immediate help is said to be gained by
plunging his body in the water.

As lightening is very frequent at sea in many
latitudes, and great mischief often done by it to
shipping; so the method here proposed to prevent
its evil effects, being of small expence, easy con-
struction, not inconvenient, and apparently very
effectual: 'tis to be hoped that it will obtain a
proper attention from sea-faring people.

F I N I S.

... of ... in ...
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... as the ...
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... to be of
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... by lightning
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As lightning is ... in many
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